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IBM Contact Optimization
User's Guide

IBM

Note
Before using this information and the product it supports, read the information in "Notices" on page 137.

This edition applies to version 11, release 0, modification 1 of IBM Contact Optimization and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Chapter 1. Contact Optimization overview

IBM® Contact Optimization is a web-based extension of IBM Campaign that allows you to determine the optimal contact strategy for each customer. You can optimize over time, looking across the proposed offers and channels across multiple marketing campaigns.

Using Contact Optimization helps you:
- Limit contact fatigue
- Prevent conflicting offers
- Meet channel or inventory capacity limitations
- Maximize marketing returns on investment (ROI) or profitability

With Contact Optimization, you can effectively target customers with timely, relevant offers. These optimized offers increase response likelihood, generate positive ROI, and develop long-lasting, profitable customer relationships, while meeting corporate goals.

Advantages of using Contact Optimization

Use Contact Optimization to take a large set of targets and compare them to a complex set of rules to find the best candidates for a particular offer.

Contact Optimization considers not just the local data available within a single campaign, but data across multiple campaigns, taking into account business constraints at a much higher level (for example, outbound call center capacity). In other words, Contact Optimization helps you maximize your marketing across your entire business, not just for a single campaign or offer. Since Contact Optimization works across campaigns, you can prevent customers from being over-contacted. Preventing contact fatigue lowers the probability that those valuable customers opt-out from further communications or dispose of your communication without reading it. Starting with a larger initial selection expands your opportunities to reach previously under-resourced segments of your customer base. At the same time, the larger selection maximizes overall optimality within your business constraints.

You configure Campaign to select targets for your marketing campaign from your customer data. This selection process can be simple, for example:
- All female customers

Or more complex:
- All female customers
- Between the ages of 25 and 45
- Earn over $45,000 a year,
- Purchased your product in the last 90 days
- Have not been contacted for at least 30 days

However, in any marketing organization that is product- or offer-centric, multiple campaign designers are competing for the best targets for their product or offer. Teams competing for the same targets often raises the following challenges:

- Cross-campaign collision. Cross-campaign collision occurs when multiple campaigns target the same customer. For example, if you have two campaigns:
  - A mortgage refinancing offer for people who recently moved to a new home
  - A free online banking offer for people who recently opened accounts

  It is highly probable that many of your customers might be targeted for both campaigns.
- Customer fatigue. Repeatedly contacting the same customers, leading to decreasing response rates over time. Many of your best customers are good candidates for virtually any offer. Campaigns commonly overlap in their target selection by selecting from your top-tier or most loyal customers.
- Missed opportunities. Some customers might be satisfactory candidates for an offer, but are consistently ignored by the current selection process.

Contact Optimization in practice

Consider the following scenario:

One marketing team creates a campaign that identifies high-value customers that are based on recent use of loyalty cards at the stores in the team's region. Customers that meet these criteria are sent tickets to a private invitation-only sales event at a small set of larger stores.

Another marketing team creates a campaign that identifies high-margin customers that are based on significant spending through the website channel. Customers that meet these criteria receive a special online-only coupon the next time they login to the online store.

Yet another marketing team creates a campaign that identifies top-tier customers that are based on the long-time and consistent use of loyalty cards and correspondingly high spending habits. Customers that meet these criteria receive special mailings with in-store coupons.

Many of the customers are targets for at least two, if not all three of these independent marketing campaigns. Excessive contact might drive away some business, or cannibalize success of one marketing campaign at the cost of another. For example, a high-value customer received both a web coupon and an in-store coupon. The customer might spend the same amount of money regardless, resulting in a wasted contact, and a lower response rate for one of the campaigns. Worse yet, sending out a 15% off coupon and a 20% off coupon to the same customer for the same time frame results in a lower-than-expected response rate from the 15% offer. To combat the fatigue issue, you might have different business rules such as:
- Only four email contacts are allowed in any one-month time period.
- At least 14 days must elapse between direct mailings.

However, since individual campaigns do not interact with each other, this strategy does not support other guidelines, such as "customers who receive the invitation-only sales event offer cannot receive the in-store coupons."

Companies with customer-centric (for example, segment-based) marketing largely avoid these types of offer conflicts, since a single individual controls the entire stream of communications to the customer segment. This segment-based approach has its benefits, but it is a difficult and time-consuming process for a company to change from a product-centric to a customer-centric marketing organization.

With Contact Optimization, you create a set of constraints or rules that address all three of these situations to determine the best candidates for each across the whole of your customer pool. Using the Max # of Packages rule, you can limit the number of offers a customer receives. Using the Never A with B rule, you can enforce that no one receiving the invitation-only sales event offer receives any coupons. Each marketer determines a score for each offer. Contact Optimization optimizes the contacts, providing the surviving list of contacts that satisfy the specified rules and constraints. The marketers then extract the contacts for their offer and complete their campaigns, each campaign reaching out to the globally optimized set of best customers.

Contact Optimization data flow

Contact Optimization works by taking a list of proposed contacts from one or more Campaign flowcharts, applying rules to the proposed list, and generating an optimized list of contacts.

The following diagram shows how data flows between Campaign and Contact Optimization.
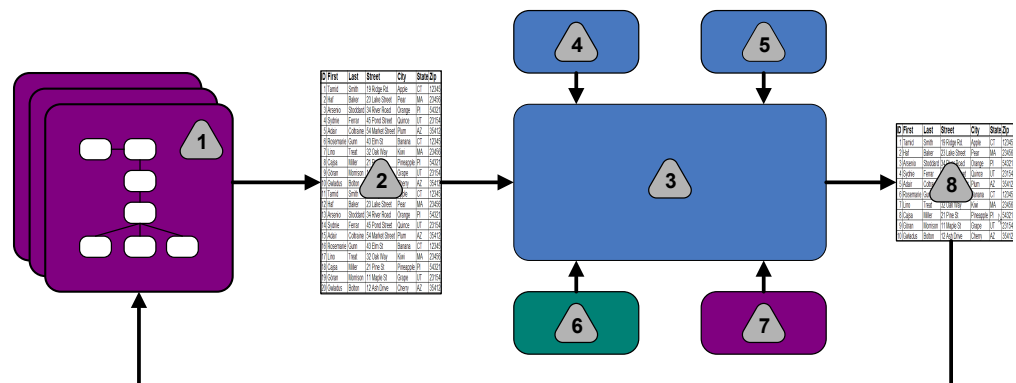
1. Campaign flowcharts
2. Proposed contacts
3. Contact Optimization optimization algorithm
4. Constraint rules from Contact Optimization session
5. Business rules from Contact Optimization session
6. Contact history
7. Segments and offer lists from Campaign
8. Optimized contacts

In Campaign, you create flowcharts to select your proposed contacts. You then create a Contact Optimization session. The Contact Optimization session is where you define your constraints and business rules. You run the Contact Optimization session to apply the following items to your proposed contacts by using an optimization algorithm:

- Your rules and constraints
- Contact history
- Any other necessary data from your customer data

The Contact Optimization session returns an optimized list of contacts to Campaign. You can then use this optimized list in a flowchart that uses a contact processes. Contact processes control the actual execution of completed campaigns, which includes:

- The management and creation of contact lists
- The treatment of target audiences
- The logging of data

Campaign overview

Campaign is a web-based IBM Marketing Software solution you use to design, run, and analyze direct marketing campaigns.

Campaign provides a graphical user interface that supports the direct marketing processes of selecting, suppressing, segmenting, and sampling lists of customer IDs.

After you select your targets, you can use Campaign to define and run your marketing campaign by assigning offers, sending emails, and other actions. You can also use Campaign to track the response to the campaign, creating lists and logging contacts to contact history. You can then use this information in your next campaign.

Campaign key concepts

Before you use Contact Optimization, be familiar with the following Campaign concepts.

- "Campaigns"
- "Flowcharts"
- "Offers" on page 5
- "Cells" on page 5

For more information, see the *IBM Campaign User's Guide*.

Campaigns

In marketing, a campaign is a selection of related activities and processes that are performed to achieve a marketing communication or sales objective

IBM Campaign also contains objects that are called campaigns that are representations of marketing campaigns that facilitate design, testing, automation, and analysis.

Campaigns include one or more flowcharts that you design to perform a sequence of actions on your data for running your campaigns.

Flowcharts

In Campaign, flowcharts represent a sequence of actions that you perform on your data, as defined by building blocks called processes.

Flowcharts can be run manually, by a scheduler, or in response to some defined trigger.

You use flowcharts to accomplish particular marketing goals, such as:

- Determining qualified recipients for a direct mail campaign
- Generating a mailing list for this group of recipients
- Associating each recipient with one or more offers

You can also track and process respondents to your campaign, and to calculate your return on investment for the campaign.

Within each of your campaigns, you design one or more flowcharts to implement the campaign. As you define the flowchart, you configure the processes that make up the flowcharts to perform the required data manipulation or actions.

Each flowchart has the following elements:
- Name
- Description
- One or more mapped tables from one or more data sources
- Interconnected processes that implement the marketing logic

Offers

An offer represents a single marketing message, which can be delivered in various ways.

In Campaign, you create offers that can be used in one or more campaigns.

Offers are reusable:
- in different campaigns;
- at different points in time;
- for different groups of people (cells);
- as different "versions" by varying the parameterized fields of the offer.

You assign offers to target cells in flowcharts by using one of the contact processes. You track your campaign results by capturing data about customers who received the offer, and customers who responded.

Cells

A cell is a list of identifiers (such as customer or prospect IDs) from your database.

In Campaign, you create cells by configuring and running data manipulation processes in flowcharts. These cells can also be used as input for other processes in the same flowchart (downstream from the process that created them). There is no limit to the number of cells you can create.

Cells to which you assign one or more offers in Campaign are called target cells. A target cell is a distinct group of homogeneous audience members. For example, cells can be created for any of the following groups:
- High-value customers
- Customers who prefer to shop on the web
- Accounts with on-time payments
- Customers who opted to receive email communications
- Loyal repeat buyers

Each cell or segment you create can be treated differently, with different offers or contact channels, or tracked differently, for comparison in performance reporting.

Cells containing IDs qualified to receive an offer but that are excluded from receiving the offer for analysis purposes are called control cells. In Campaign, controls are always hold-out controls.

The term "cell" is sometimes used interchangeably with "segment." Strategic segments are cells that are created in a session rather than in a campaign flowchart. A strategic segment is no different from other cells except that it is available globally, for use in any campaign. A strategic segment is a static list of IDs until the flowchart that created it originally is rerun.

Contact Optimization key concepts

This section describes some of the key concepts you need to understand before you work with Contact Optimization.
- "Proposed Contacts Table"
- "Optimized Contacts Table"
- "Optimization period" on page 7
- "Contact Optimization template table" on page 7
- "Contact Optimization session" on page 8
- "Optimization rules and constraints" on page 8

Proposed Contacts Table

The proposed contacts table (PCT) is the list of contacts, associated offers, channels, contact dates, and scores to which Contact Optimization applies optimization rules and constraints. After Contact Optimization sorts through the PCT by using the rules and constraints you create, it produces the list of optimized contacts.

The PCT is created when you create a Contact Optimization session. Campaign populates the PCT with proposed contacts and associated offers. Specifically, you link Campaign with Contact Optimization by including an Optimize process in a Campaign flowchart. When you configure the Optimize process, you select a Contact Optimization session to associate with that flowchart. When you run the flowchart, Campaign writes to the PCT associated with the selected Contact Optimization session.

A PCT can contain proposed contacts from more than one flowchart or campaign.

The columns of the PCT are made up of the following elements:
- The audience level that you select in a Contact Optimization session.
  Audience levels are defined in Campaign.
- The fields that are defined in the `UACO_PCTBASE` table
- If you select a Contact Optimization template table in your Contact Optimization session, the columns you define in the Contact Optimization template table.

Optimized Contacts Table

The optimized contacts table (OCT) is the list of optimized contacts and associated offers that Contact Optimization produces after it applies rules and constraints to the PCT.

The OCT is created when you create a Contact Optimization session. When you run a Contact Optimization session, Contact Optimization analyzes the PCT (populated by Campaign) using the optimization rules and constraints you configured. Contact Optimization populates the OCT with optimized contacts and their associated offers during this process. Campaign then retrieves the results from the OCT for use in a marketing campaign. The OCT is composed of a subset of the PCT fields, and a field for the score that is used for optimization (that is, the score that is being maximized).

Optimization period

The optimization period is the elapsed time between the earliest proposed contact and the latest proposed contact.

For example, if a PCT contains proposed contact dates between April 1 and April 30, the optimization period is 30 days long.

The optimization period is determined by the dates that are specified in the **Contact Date** field of the PCT. The **Contact Date** field is populated by the values in the Assignment tab of the Optimize process.

Contact Optimization template table

A database table that you create to include user-defined columns in the PCT for reference by one or more optimization rules.

When you create a session in Contact Optimization, you can select one of the Contact Optimization template tables that you created. You must create the Contact Optimization template table in the same database where the system tables are located.

During the optimization process, the columns that you created in this table are automatically appended to the base PCT fields contained in the UACO_PCTBASE table. The defined data types and sizes of these columns are also included. These fields can then be populated by Campaign flowcharts and later used in rules by Contact Optimization.

These fields are not appended to the OCT. However, the OCT references the PCT; therefore, you can also extract any data from additional fields in your post-optimization flowchart.

Examples of the information (columns) you might add to the template table include vendor name, age, or account type. This information is likely specific to the nature of your business. Based on this example, you can then write an Include rule that specifies that only `AccountTypes = "Good Standing"` are eligible to receive "credit offers."

Related concepts:

"Configure a Contact Optimization session to use a score field from the PCT" on page 67

Related tasks:

"Selecting more than one package from a single Extract process" on page 93

"Retrieving optimized contacts by a PCT or OCT field" on page 90

"Creating a template table" on page 15

Contact Optimization session

In a Contact Optimization session, you define the rules that Contact Optimization uses to include or eliminate contacts and their associated offers from the PCT.

When you create a Contact Optimization session, you select an audience level to be added to the PCT and OCT. You can also include an optimization template table whose fields are appended to the PCT and OCT.

You associate a marketing campaign with a Contact Optimization session in the following way:

1. Create a flowchart in Campaign.
2. Add an Optimize process to that flowchart.
3. Select the Contact Optimization session when you configure the Optimize process.

The same Contact Optimization session can receive proposed contacts from multiple flowcharts and campaigns.

Optimization rules and constraints

The criteria by which the set of final contacts (the OCT) is determined. You can define multiple rules and constraints within a single optimization, which apply to all campaigns that participate in the Contact Optimization session.

The terms "rules" and "constraints" are often used interchangeably as the difference between them is subtle. Constraints have many possible alternative solutions and the "best alternative" is chosen by maximizing an objective function, for example, maximizing a score value. Rules eliminate possible alternatives.

To understand constraints, consider this example: A constraint specifies that each customer can receive only three offers in any given 30-day window. If a customer is eligible to receive offers A, B, C, and D, the possible combinations of viable alternatives that satisfy this constraint include A, B, C, AB, AC, AD, BC, BD, ..., ABC, ABD, BCD.

To understand rules, consider this example: A Gold credit card offer cannot allowed to be sent within 90 days of a Platinum credit card offer.

When you work with rules and constraints, you need to know the following terms:

- **Customer**. A customer represents any marketable entity. In your implementation, a customer can be an individual person, a household, an account, or any other audience level that is defined in Campaign.
- **Interaction**. A communication of one offer to one customer, also called a contact.
- **Offer**. A message, often promotional, sent to a customer over a contact channel on a specific date. For example, a low credit card interest rate or a coupon for a certain percent discount at a retail store.
- **Channel**. A means of contacting, being contacted by, or interacting with a customer or prospect as part of a campaign. Examples include direct mail, telemarketing, fax, customer service or support, point-of-sale, email, and websites.
- **Package**. All offers sent to the same customer through the same contact processes (in Campaign), delivered on the same channel at the same time. A package represents a single "interruption" to the recipient, but can contain multiple communications or offers. For example, a package can be multiple

coupons in a coupon book or multiple offers within the same email. Contact fatigue constraints are likely based on packages rather than offers. For example, a marketing company wants to limit the number of direct mail pieces a prospect can receive, which is based on packages. You can also limit the total number of offers any individual receives, regardless of how those offers are grouped into packages.

- **Scope**. The contacts that are impacted by a rule as specified by the use of a strategic segment, offer, or offer list, or channel. Rules define both the action and the contacts to which that action applies. For example, a rule might state that "high-value customers" must receive between one and three "discount offers" each 60-day period. "High-value customers" might be a strategic segment that is defined in Campaign and "discount offers" might be a smart offer list that is defined in Campaign. The scope of this rule is restricted to this segment and offer list. The action is to specify a minimum and maximum number of contacts over a 60-day time period.

Overview of using Contact Optimization

The following steps outline how to use Contact Optimization to determine the overall optimal communication strategy across campaigns.

1. (Optional) If you would like to optimize across values in categories you define, create a Contact Optimization template table in the Campaign system table database.

   For example, if you have loyalty points for your customers, you might want to include a loyalty point column in your Contact Optimization template table.

2. Create a Contact Optimization session that contains the rules and constraints to apply.

   You can create a single Contact Optimization session to handle all campaigns you want to optimize. Or, you can create separate Contact Optimization sessions to handle different types of campaigns, such as campaigns for different communication channels, or campaigns for different lines of businesses. The broader the scope of a single Contact Optimization session, the more opportunity you have to truly optimize across your business. By specifying business rules and constraints, and by using scores such as response likelihood, you can determine the optimal communication strategy for maximizing the value of each customer contact.

3. Set up at least one campaign that has a flowchart with one or more Optimize processes.

   When you configure the Optimize process, you select a Contact Optimization session to associate with the process. The eligible contacts are written with their associated offers to the PCT of the selected Contact Optimization session.

4. Set up another flowchart in the campaign that is mentioned in the previous step.

   This flowchart retrieves the optimized contacts from the Contact Optimization session and can send marketing communications to the list of contacts. This flowchart is called the post-optimization flowchart.

5. Run the flowchart that contains the Optimize processes.

   When you run the flowchart, Campaign writes to the PCT. Contact Optimization accesses this list of proposed contacts and offers. If you have multiple campaigns, each campaign manager must run the Campaign sessions to create a complete proposed contact list for optimization.

6. Perform a test run and a production run of the Contact Optimization session to generate the optimized contact list.

Reviewing the rules and the optimization results is an iterative process, especially in the beginning. During the review process, you can change rules or the initial selection criteria to address the goals of each campaign manager. If adjustments are required, you can edit the definitions, rules, and scoring for the session (if you are using the internal scoring table within Contact Optimization). Campaign managers can also modify the flowcharts that submit contacts or scores to Contact Optimization and then run the flowcharts again.

7. Trigger or manually run the post-optimization flowchart to retrieve the optimized contact list from the Contact Optimization session and send the marketing communications.

Contact Optimization in a multi-locale environment

You can use Contact Optimization in a multi-locale environment, but there are a few caveats.

Support for viewing Contact Optimization in multiple languages is based on the concept of a locale. Locale is the combination of the language that is used in the user interface, and how the interface displays time, numbers, and dates.

Each IBM Marketing Software application supports a specific set of locales, including a default locale. The locale that is used to view Campaign and Contact Optimization is determined by the interaction of the following settings:

- Support for a locale
- The default locale for the application
- The locale preference of the user

Your IBM Marketing Software administrator can define a preferred locale for users.

Contact Optimization and Campaign both support simultaneous access by multiple users with different locale preferences. Consult with your IBM Marketing Software administrator to determine the locales available to you.

There are no locale preferences or restrictions on the names you assign to objects in Contact Optimization or Campaign. You can use any language to name a Contact Optimization session or rule. However, the names you use are not translated. For example, if you have a French locale user with permission to see the Contact Optimization sessions of a Spanish locale user, the French locale user sees the Contact Optimization session and rule names in Spanish.

Chapter 2. Getting started with Contact Optimization

Contact Optimization can optimize your marketing campaign and improve response from customers, but only if you know what you want to optimize. You need a plan, the data to support the plan, and an implementation method.

Optimization is not a static concept. As your business plans grow and change, so must your optimizations. As you track the results of your campaigns, you can analyze the effectiveness of your optimizations, and modify them as your needs change. Over time, you can reevaluate how you implement Contact Optimization and "optimize your optimizations."

Planning for Contact Optimization

You must answer several questions before you start to implement Contact Optimization.

Choose an audience level

The audience level is the contactable entity such as customer, prospect, account, or household. A Contact Optimization session works at a single audience level. Depending on the audience level you choose to optimize over, you might need more than one Contact Optimization session.

Choose an optimization metric

After you decide on your audience level, the next question is, "By what metric or goal do I want to optimize?" For example, whether you are maximizing profit, revenue, or ROI. The answer to this question determines what "score" you use for optimization. Some example scores to optimize include:

- Dollars of profit
- Revenue in dollars
- Probability of response
- Expected profitability in dollars
- Profitability in dollar over cost per offer

Contact Optimization maximizes the sum of this score in the optimized (surviving) transactions. All marketing campaigns and flowcharts that participate in the same optimization session must use the same meaning of score for optimization.

Determine rules and constraints

After you know your optimization metric, ask "What rules or constraints does my business have that drive the optimization process?" The following options describe different types of business problems you can address through optimization.

- Channel capacity optimization. With fixed channel capacity, what channels do I use to communicate with which customers and when?
- Customer optimization. With limited opportunities to communicate with my customers, which offers do I give to which customers while managing contact fatigue?

- Offer optimization. Which customers get offer X, when you have only a limited number to distribute?
- Time optimization. Which offers conflict with each other? Which offers do I give only if another offer has already been presented? Which offers are most valuable to present to a particular customer first?
- Budget optimization. How do I allocate my money across different campaigns, offers, or customers?

You can create optimizations that address many of these issues. You can also consider these rules and constraints for use across your organization, including:

- Global suppressions. Ensure customers who elect to not receive email are not contacted by email
- Rules to manage contact fatigue. Limit the number of contacts by segment, by channel, time periods, or specific offers.

Choose a time period

After determining the rules and constraints that are appropriate for your organization, ask "For what time period do I optimize?" Your time window is the amount of time you are looking into the future across proposed contacts that have not yet been delivered. The larger your time window the more opportunities there are to optimize. However, too large of a time window might be prohibitive for a number of different reasons. For example, trying to use a six-month time window would require that all your campaigns be designed and implemented at least six months in advance.

Choose a scoring method

Contact Optimization uses scores as a measure for choosing one proposed transaction over another when solving the optimization problem. Therefore, you need a method for generating scores. Some common methods include:

- A constant per-offer or offer-cell combination
- A computation per individual, offer, or offer-cell combination
- A predictive model (based on individual, offer, channel, or time)

Determine your optimization scope

As you answer these questions, you might want to start small, with only a few campaigns, one product line, or one business division. Start with simple optimization problems. Although you might want to maximize profit while you work with offer, budget, and customer optimization, it is a better practice to apply fewer rules and constraints at first. Then, analyze your results before you add more. Remember, each time you add more constraints, you reduce the optimality of your results. Therefore, focus on the constraints that are most important to you first and weigh carefully the business benefit of additional constraints. After studying the results of your initial optimization sessions, you can add more rules and constraints to add complexity. Figuring out the right set of rules and constraints to use for your business takes some testing. You need to refine your rules over time.

Required data

After you define what you want to optimize, you must confirm that you have all the data that you need to implement your plan.

Contact Optimization works with Campaign and requires the following data:

- **Response tracking and analysis, including contact and response history**. To manage contact fatigue by ensuring you do not send too many offers to the same person, you must track what you send. To monitor how effective your campaigns and optimizations are, you must track customer response. You can compare the results of contacting a target group versus not contacting members of a statistically similar control group. To evaluate the effectiveness of using Contact Optimization, you might want to hold out a group of proposed contacts that do not undergo optimization and compare that to the results of optimized contacts. Measurement of the benefit of optimization might take multiple forms, for example, increased response rate or ROI, fewer opt-outs, or greater customer satisfaction.

- **Defined offers**. You need a list of all the offers that are included in your optimizations as you design your rules and constraints. You might apply your rules and constraints to specific groups of offers. Groups of offers are defined as offer lists, typically based on the offer attributes or types of offers. If you plan to manually enter scores in the centralized score matrix, you need a list of the offers for which you plan to enter score values.

- **Defined segments**. You must understand all the segments that you want to optimize across as you design your rules and constraints, as you can constrain the applicability or scope of rules and constraints to specific segments. If you plan to manually enter scores in the centralized score matrix, you need a list of the segments for which you plan to enter score values.

- **Defined scores**. As you planned your implementation, you chose a scoring method. You must have a process for generating these scores. For example, if you are populating the scoring matrix with constants, you must choose for which offers and segments you define the scores and determine the actual score values. If you are using computations, you must define the equations. For example, using a derived field to calculate the profitability of a proposed credit limit increase offer that is based on the average carried balance of an individual. If you are using predictive models, you need to collect, aggregate, pre-process, and model your data in your modeling applications.

Implementing Contact Optimization

The details of setting up Contact Optimization are lengthy; however, the general process is simple.

Follow these steps to start your implementation:

1. In Campaign, define your audience levels, offers, offer lists, and segments.

   See "Building offer templates for Contact Optimization" on page 16 for offer template requirements.

2. Create your Contact Optimization sessions (where you define your rules and constraints) and then link the Contact Optimization sessions to the campaigns.

3. After your building blocks (offers/offer lists and segments) are created in Campaign, build your campaigns and flowcharts.

Define an audience level

The audience level that you select for a session becomes a field in the proposed contacts table (PCT) and optimized contacts table (OCT). This field defines the type of contact that ultimately receives communication from your organization.

When you create a Contact Optimization session, you must select an audience level for that session. A Contact Optimization session works at a single audience level. If your company uses Campaign to communicate with contacts at different audience levels, you must create a separate Contact Optimization session for each audience level that you want to optimize.

Defining a new audience level for Contact Optimization

You must work with your Campaign administrator to create required audience levels.

You might need to define a new audience level for your Contact Optimization session. Campaign administrators can create new audience levels. When you create an audience level, Campaign creates a virtual contact history table in the Campaign system tables. The administrator must map the Campaign contact history table to a database contact history table (a "physical" contact history table). This step ensures that you have a record of customer contacts. Certain optimization rules are based on whether previous communications were made to a proposed contact. This information is stored in the database contact history table; therefore, mapping the contact history tables is an important step.

After an administrator creates and maps an audience level to a contact history table, the audience level is available for use in a Contact Optimization session.

For more information about defining a new audience level, see the *IBM Campaign Administrator's Guide*.

Create template tables

The template table is a table that you create in your database to append customized fields to the PCT and to the OCT. You can use these fields in your optimizations.

When you create a session in Contact Optimization, you can select a template table. If you select a template table for your session, the PCT and OCT contain the following fields:
- All the fields in the template table
- The predefined fields that are specified in the UACO_OCTBASE table
- Fields that are associated with the audience level that you choose when you create a session

Prohibited fields

Do no include fields that are also included in the following tables in your optimization template table:
- The audience level that you choose for your Contact Optimization session. If you choose Customer as your audience level, and that audience level contains a field that is called CustomerID, do not include a field with the same name in your template table.
- The UACO_PCTBase table. For example, do not include a Contact Optimization template table field that is named ScorePerOffer or CostPerOffer, since these fields are fields in the UACO_PCTBase table.

The repetition of the field name can cause confusion when Contact Optimization retrieves information from the ContactHistory table.

Use database views

Create a single physical database table that contains all possible customized fields that you might want to use in a Contact Optimization session. This practice is preferable to creating separate physical tables, each with its particular pairing of fields, for each session. For example, instead of creating two optimization template tables, one with fields A, C, and E, and another with fields B and D, it is better to create one database table with fields A, B, C, D, and E.

You can then create standard database views that include the permutations you want, based on the same physical table. Each view that you create represents a separate optimization template table that you can use in an optimization session.

Create a field to represent the Optimize process

You might need to include a Segment process in your post-optimization flowchart to divide customer IDs back into their individual packages. Packages originate from an Optimize process. To select the Optimize process, or package, as the field by which you want to segment, you must include a field in the optimization template table to represent the Optimize process. For example, you might include a field that is called `OptimizeProcess` in your optimization template table, which you later select as the field by which to segment.

Create a score field

By default, the PCT template contains the `ScorePerOffer` field that you can use when assigning scores in an optimization session. However, Contact Optimization can use any numeric field in the template table for scores in an optimization session. The `ScorePerOffer` field has a float data type. If you must use another data type for your scores, you need to either create a column in your template table or edit the existing score column. You might also have several types of scores that you are comparing to determine which is most optimal for a particular Contact Optimization session. By creating many possible score fields in your template table, you can switch between score types when you configure your optimization sessions without rerunning each of the participating campaigns and flowcharts.

Related concepts:

"Configure a Contact Optimization session to use a score field from the PCT" on page 67

Related tasks:

"Selecting more than one package from a single Extract process" on page 93

"Retrieving optimized contacts by a PCT or OCT field" on page 90

"Creating a template table"

Creating a template table

1. Create a database table that contains all possible customized fields that you might want to use in your Contact Optimization sessions.
2. Create database views for each combination of fields that you want to use in a Contact Optimization session.

   Note: The database table and the database views must exist in the same database where the system tables are located.

3. Add the new table and database views to the `Campaign | partitions | partitionn | Optimize | userTemplateTables | tablenames` configuration parameter with a comma delimited list. For example, `Database1.UACO_UserTable,Database1.view1`.

> **Note:** The names of the table and database views must be fully qualified. For example, `database_schema.table_name` or `database_schema.view_name`.

Related concepts:

"Create template tables" on page 14

"Contact Optimization template table" on page 7

Building offer templates for Contact Optimization

All offers that you work with in Contact Optimization must contain the offer attributes **Cost Per Offer** and **Channel**.

You must confirm that your offer templates include these offer attributes. Without them, the Channel and Cost per Offer attributes in your optimization rules default to values that can cause your rule to be less effective.

For more information about creating offer templates, see the *IBM Campaign Administrator's Guide*.

Chapter 3. Contact Optimization sessions

A Contact Optimization session is a combination of rules and scores that apply to a set of proposed contacts.

To begin using IBM Contact Optimization, you must create a Contact Optimization session.

A Contact Optimization session works at a single audience level, for example, customer, household, and account audience levels. If your company uses IBM Campaign to communicate with contacts at different audience levels, you must create a Contact Optimization session for each audience level that you want to optimize.

You might choose to create smaller Contact Optimization sessions for particular types of campaigns, for a particular branch or division of your company, for example. You might use Contact Optimization to optimize within a single campaign by:

* Managing exclusions
* Using contact history to prevent contact fatigue
* Ensuring consistent communications over time

A Contact Optimization session contains the rules and constraints to apply. It can also contain scores to use for each proposed transaction. Scores represent the value of a proposed transaction. Scores can either be:

* Passed in by each flowchart with their proposed transactions in a score field in the proposed contacts table (PCT).
* Assigned in the Segment/Offer Scores matrix within a Contact Optimization session.

Having individual scores (for example, generated by a predictive model) for each proposed transaction is more likely to yield better optimization results. However, if granular scores are not available, the Score matrix allows you to enter scores that are based on the following values:

* The strategic segment into which a recipient falls
* The offer which it being proposed

This matrix provides the means to rank offers for a particular segment, but there is no distinction among individual recipients within the same strategic segment. That is, everyone in the same segment that gets offer X has the same score Y.

Each Campaign flowchart that participates in a Contact Optimization session submits its proposed contacts for optimization by using the Optimize process. The Optimize process specifies to which optimization session it writes its proposed contacts. A Contact Optimization session can receive proposed contacts from multiple campaigns. Campaign flowcharts determine the eligibility criteria for receiving offers and assign those offers as possible communications to the recipients. Contact Optimization considers all possible contacts to a recipient, including those contacts that are made from other campaigns, and including the

contact history of the recipient. Contact Optimization then applies the rules and constraints in the Contact Optimization session to identify the best set of offers to send to that individual.

When the campaign administrators run the Campaign flowcharts, they populate the proposed contacts table (PCT) for your Contact Optimization session. Then, you can run your Contact Optimization session. The Contact Optimization session then applies the rules that you created to optimize the proposed contacts it received from Campaign. The rules exclude a subset of the proposed contacts to form the optimized contact list that you can use in Campaign marketing campaigns.

Contact Optimization session-level advanced settings

You can use advanced settings in each Contact Optimization session to set values for the configuration properties at the session level. These settings work the same as the configuration properties, except that they are applied for the particular Contact Optimization session.

Contact Optimization sessions require intensive processing. There are several configuration properties that you can use to tune this processing. However, these configuration settings are for your entire Contact Optimization installation. Based on the campaigns included in a Contact Optimization session and your optimization rules, the ideal settings for one Contact Optimization session might not be as optimal for another Contact Optimization session.

For example, you can set `CustomerSampleSize` to 1000 for one Contact Optimization session and 1500 for another Contact Optimization session.

To apply advanced settings, select **Use custom session settings** in the Contact Optimization session properties. After you select the **Use custom session settings** check box, you can define values for the Contact Optimization session. If you are defining your Algorithm Tuning, Debug, and Logging settings in your Contact Optimization session, all the session properties override the installation-level settings in your configuration properties.

To edit the advanced settings, expand the **Advanced settings** section of the Contact Optimization session and click **Edit advanced settings**. You can also click **Edit session properties** on the Contact Optimization session Summary page.

The first time that you use the advanced settings for a Contact Optimization session, the values for the advanced settings are populated by using the global settings from the configuration properties. If you disable and then re-enable the advanced settings for a Contact Optimization session, the values are populated by using the last saved advanced settings for this session. The advanced settings do not revert to the global settings.

Related reference:

"Campaign | partitions | partition[n] | Optimize | AlgorithmTuning" on page 123

"Campaign | partitions | partition[n] | Optimize | logging" on page 129

"Campaign | partitions | partition[n] | Optimize | Debug" on page 129

Create a session

Before you can build your optimization rules and constraints, you must create a Contact Optimization session.

You can create a Contact Optimization session in either of two ways:

- Using the New Contact Optimization Session page to create a Contact Optimization session from scratch.
- Using a pre-existing Contact Optimization session as a template to create a copy.

When you use another Contact Optimization session as a template, the copy that is created copies the rules and scores from the template session. You can then modify your new Contact Optimization session. The original template session is unchanged. You might want to create a Contact Optimization session that contains all of your standard optimization rules. You can then use that session as a template for all other new sessions to minimize data re-entry. Using sessions as templates both saves time and ensures the consistent application of your business rules and objectives across all Contact Optimization sessions.

This section describes both methods for creating a new Contact Optimization session, and how to edit an existing Contact Optimization session.

Related tasks:

"Creating a session by using the New Contact Optimization session page"

"Creating a session by using another session as a template" on page 20

Related reference:

"Contact Optimization session page reference" on page 23

Creating a session by using the New Contact Optimization session page

Create a Contact Optimization session to define rules and constraints to optimize your contacts.

1. Select **Campaigns** > **Contact Optimizations**.

   The **All Contact Optimization sessions** page displays.

2. Click **New Contact Optimization session**.

   The **New Contact Optimization session** page displays.

3. Complete the fields on the **New Contact Optimization session** page.

4. Click **Save**.

The **Summary** tab for the session displays. You can now add rules and scores to the session.

To edit the session name, objective, or description of a Contact Optimization session, click the **Edit session properties** link on the optimization **Summary** tab. You cannot change the audience level or template table after you create the Contact Optimization session.

To delete a Contact Optimization session, click **Delete**.

Related concepts:

"Create a session"

Related reference:

"Contact Optimization session page reference" on page 23

Creating a session by using another session as a template

You can copy an existing Contact Optimization session as a new session.

Note: You cannot edit the audience level and template table for the new session. They are the same as the original Contact Optimization session.

1. Go to the **Summary** tab of the Contact Optimization session that you want to copy.

2. Click the **Copy** icon.

   You are prompted to confirm that you want to copy the session.

3. Click **OK**.

   The **Edit session properties** page of the new session displays.

4. Complete the fields on the **Edit session properties** page.

5. Click **Save**.

The Summary tab for the session displays. The new session contains the rules and scores of the template session. You can now edit the new session.

Related concepts:

"Create a session" on page 19

Related reference:

"Contact Optimization session page reference" on page 23

Agent capacity optimization and Contact Optimization sessions

You use agent capacity optimization to route high value offers through agents to high value consumers. By routing certain offers for select consumers through your agents, you assure one on one contact with high value consumers and increase the return on your marketing investment.

An agent is associated with many customers, but these customers are not shared with other agents. A customer can be associated with only one agent. You provide this association by using the agent customer relationship table.

Capacity is the number of contacts an agent can handle for the optimization period or run. To use agent capacity optimization, you must create an agent customer relationship table and an agent information table in the Campaign system table database so that this information is used during optimization for agent capacity optimization. These tables are referred to as agent tables.

To use agent capacity optimization, while you create a Contact Optimization session, you must declare a campaign channel that is considered as an agent channel. All offers that are proposed through this channel are routed through agents. You specify one agent information table and one agent customer relationship table for your session. Then, you define one or more Min/Max # offers capacity rules on the agent channel.

The agent customer relationship table contains the unique identification values (IDs) of agents and the audience ID of associated customers. This table must be present in the Campaign system database. The audience level of the audience ID must be the same as the audience level of your Contact Optimization session. The ordinal position of the fields of the agent customer relationship table is fixed, and must have the following information.

- The first column must be the agent ID, having the data type as either an integer, varchar, or text.
- The second column must be an audience ID, having the data type the same as the data type of the audience level. If the audience level consists of two or more fields, then this table should have the same number of fields as the audience ID. The sequence of these audience fields should be the same it is defined in Campaign.

The agent information table contains the unique identification values (IDs) of agents and their capacity. This table must be present in the Campaign system database. The ordinal position of the fields of the agent information table is also fixed, and must have the following information.

- The first column must be agent ID, having the data type as either an integer, varchar, or text.
- The second column must be the capacity of the agent, having the data type as an integer.

The Min/Max # offers capacity rule on the agent channel that you define identifies the customers who are targeted to receive offers through the agent channel. The agent information table and agent customer relationship tables are referenced to filter the list, and any other rules and constraints that you supply are also applied. The result is an agent-specific list of high-value customers for the offer.

Scenario example

The following scenario is an example of when to use agent capacity optimization.

You want to promote a fund-raiser by offering an incentive to customers who participate. Your company wants to offer these discounts for customers in a specific region through an employee/customer relationship. There are three locations in this area. There is an employee (or "agent") that is allocated for each area. Because this company has a limited number of employees and the costs of direct contact are typically high in comparison with other channels, such as email or online, they want to route these offers through employees only for high profile customers (for example, customers that have an income greater than $25,000 per month). For other customers, the email channel would be selected.

Enabling agent capacity optimization

Before you produce any output, you must set up the database properly to support the use of agent capacity optimization.

The relationship between the agent and customer, as well as every agent's capacity to contact customers over the optimization time period, is supplied by the information you enter in the database tables. The capacity of each agent cannot be specified from within the user interface. This must be provided to Contact Optimization by using the agent information table.

1. Create the agent tables in the Campaign system tables database. For more information about Contact Optimization system tables, see the *IBM Contact*

Optimization System Tables. You must populate these tables, either by using your customer scripts or by using third-party ETL tools, before you run the Contact Optimization session.

2. Enter the names of the agent tables in **Affinium | Campaign | partition | partition[n] | Optimize | AgentTemplateTables**. When you create a Contact Optimization session, you select from the agent tables. These tables must be populated before you run the Contact Optimization session for processing of agent capacity optimization. To enter multiple tables, use a comma-separated list.

3. Add a channel in Campaign that is used as the agent channel for agent capacity optimization.

4. Create offers that will be routed through the Agent channel. For more information about offers, see the *IBM Campaign Administrator's Guide*.

5. Design a campaign and add a flowchart.

Producing agent capacity optimization output

After you enable agent capacity optimization, create a Contact Optimization session, select the agent tables, and define the Min/Max # Offers Capacity rule to create your output.

Before you run a Contact Optimization session with agent capacity rules, verify the contents of the tables. It is validated if the agent customer relationship table, as well the Agent information table, contain the most up-to-date data. This can be done only outside of Contact Optimization, for example, by using a query editor.

1. Create a Contact Optimization session, and select the agent channel, agent customer relationship table, and agent information table for this session. After you select the tables for your session, you see template details. Ensure whether the agent tables contain the correct audience level for the session that is similar to the configuration of the template tables. After saving, the session is ready to use.

2. Click the **Rules** tab on the Contact Optimization session you create. Then, select the cross customer Min/Max # Offers Capacity rule on the channel that you selected as the agent channel, which you created during your Contact Optimization session. This rule is the only rule that is supported for agent optimization.

   - A minimum capacity of zero is assumed when the Agent channel is selected. It cannot be changed because the capacity comes from the underlying agent information table.

   - The time period for agent optimization is always **This optimization period**.

   - As with any other rule, the score is taken into account for the Agent channel.

   - After you add the Min/Max # Offers Capacity rule on the agent channel, you add one or more other rules according to your business goals.

3. Click **Production run**. After the Contact Optimization session runs, you can export the data from the optimized contact table (OCT) and route it to agents in your organization. This is an external procedure from Contact Optimization and is implementation-specific. For example, ETL routines can be used from the outcome of the optimized contacts table (OCT). Then, this data can be exported to the agents.

4. Your output is under the **Analysis** tab. Your output shows an offer count, as well as the totals for how many contacts were removed and are remaining because of Min/Max # Offers Capacity rule on the agent channel.

5. Optional: If you get results that underutilized the agent's capacities, enable **EnableMaxCapacityConsumption** to reduce the loss of agent capacity. Then, rerun the Contact Optimization session.

Keep in mind that Contact Optimization does not provide solutions when the agent has too many contacts or when an agent can work on more than the assigned discussions or contacts. You must take this into consideration when you create and populate your tables.

Contact Optimization session page reference

Contact Optimization sessions require the following information.

Field	Description
Session name	Enter a name for the session. Each session must have a unique name. Avoid using the following characters: • Pound (#) • Dollar ($) • Ampersand (&) • Less-than (<) • Greater-than (>) • Apostrophe (') • Percent (%) • Asterisk (*) • Question mark (?) • Pipe (vertical bar) (|) • Colon (:) • Comma (,) • Backward slash (\) • Forward slash (/) • Double quotation mark (") • Tab (<tab>) After you save this session, the session name displays on the All Contact Optimization sessions page.
Audience level	Select an audience level for this session. The audience level that you select is appended as one or more fields in the proposed contacts table (PCT) and optimized contacts table (OCT). The audience level defines the type of contact that receives communications from your organization. Audience levels are defined by an administrator in Campaign. For more information about audience levels, see the *IBM Campaign Administrator's Guide*.
Contact Optimization template table	(Optional) Select a Contact Optimization template table to include user-defined fields to the PCT and OCT for this session. When you select a table, the template table details are displayed in the adjacent section.
Objective	(Optional) Enter the goal of the Contact Optimization session.

Field	Description
Description	(Optional) Enter a description of the Contact Optimization session. After you save this session, the description displays on the All Contact Optimization sessions page.
Agent channel	(Optional) Select an Agent channel for this session if you want to run agent capacity optimization. The default value is None. If you select None, the agent capacity optimization feature is not usable.
Agent information template table	(Optional) Select an Agent information table for this session. This becomes mandatory if you select An agent channel. This table contains the agents and their capacity and is populated outside of Contact Optimization.
Agent customer relationship template table	(Optional) Select an Agent customer relationship table for this session. The Agent information template table and the Agent customer relationship table can be used by many sessions in parallel or after each other; however, even though the same two base tables are used, you must define both tables for each session if you intend to run agent capacity optimization. For example, it can contain the complete agent-customer base for the entire organization, or there can be multiple tables that contain data for specific sessions or data that is related to specific business departments. During an Optimization run, only the customers that are in the PCT are taken into account, which are also found in the agent customer relationship table that is related to the specific Contact Optimization session.

Related concepts:

"Create a session" on page 19

Related tasks:

"Creating a session by using the New Contact Optimization session page" on page 19

"Creating a session by using another session as a template" on page 20

Chapter 4. Optimization rules

IBM Contact Optimization uses the rules and scores you define in your Contact Optimization session to mathematically determine the best combination of final contacts you use across your marketing campaigns.

You can create an unlimited number of rules in Contact Optimization, to implement simple or highly complex optimization strategies. These rules might involve strategic segments, offers, offer lists, offer attributes, channels, time periods, or budgets.

Rules and constraints

In Contact Optimization, you define how optimization behaves by defining different combinations of rules and constraints in a Contact Optimization session.

Most of the time, this guide uses rules and constraints interchangeably and generally calls all rules and constraints within Contact Optimization "rules."

From a strict definition standpoint, rules are requirements that have a single solution. Global exclusions using the Interactions Where rule, or a Never A with B rule, are rules. For a particular set of offers for an individual, the combination is either allowed or it is not. The rule is either true or it is not. For example, an A not following B rule states that offer A cannot be given within 30 days of offer B. The customer, Mr. Jones, who is proposed offer A is either:

- Allowed to receive the offer because he has not received offer B within the last 30 days.
- Not allowed to receive the offer because he has received offer B within the last 30 days.

If Mr. Jones has not received either offer A or B in the past, but is proposed offer A and B, he can receive only one of the offers in any 30-day window. Any proposed offer combinations must satisfy this condition.

A constraint typically specifies a minimum or maximum threshold that cannot be exceeded. There are many possible solutions satisfying the constraint where the goal is to pick the solution that maximizes a particular objective function, for example, maximizing the sum of scores. Constraints might limit contacts by:

- The maximum number of calls the sales team can make in a week
- The amount of marketing activity that is based on the budget
- The pieces of collateral available in inventory

You can create rules with a single answer, such as "If customerA receives a Platinum credit card offer, customerA cannot receive a Gold offer within the same month." You can also create rules with many possible answers. These rules might limit contacts by the maximum number of calls the sales team can make, or the amount of activity that is based on the budget, or the pieces of collateral available in inventory. Furthermore, you can define customer preferences such as contact frequency and channel capacity in rules.

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Rule order

Contact Optimization runs all optimization rules in a session by using logical AND operations.

Logical AND of rules depends on the proposed transactions of a customer and the scope of rules.

If transactions of a customer come under more than one rule, all of the rules would be processed as an AND operation for that customer.

As a result, the order in which Contact Optimization applies the rules does not affect the optimization results, except for analysis in the Transaction Filtering Summary report. The Transaction Filtering Summary report presents analysis of the number of transactions that are eliminated by each rule in the order in which rules are entered. When a single contact might be rejected by multiple rules, the Transaction Filtering Summary report credits only the first applicable rule in the list.

Minimum constraints

Contact Optimization handles minimum constraints differently depending on the type of rule in which the constraints are used.

In capacity rules, for example, Min/Max # Offers, Contact Optimization gives as many offers as possible. The following scenario is an example of this. You have an input cell 1 that contains 100,000 contact IDs, which are all 100,000 distinct audience IDs. Offer 1 is assigned to input cell 1. You also have input cell 2 that contains one contact ID, and the audience ID is not in input cell 1. Offer 2 is assigned to input cell 2. The one capacity rule sets the minimum number of offers to 1, and the minimum number of contact ID is set to 100,000. However, it might not be possible to achieve the minimum. For example, if you have a rule that says a minimum of 10,000 of offer X must be given out, there might be fewer than 10,000 proposed offer X in the PCT. Even if there are over 10,000 instances of offer X in the PCT, it might not be possible to give all of them out as they might conflict with offers those individuals might receive.

In For Each Customer rules, Contact Optimization gives out the minimum number of an offer or it does not give out any offers to that recipient. For example, you have a rule that says a minimum of six offers for each customer. CustomerX is only eligible for five. Therefore, Contact Optimization does not propose any offers for customerX.

If an optimization session does not meet a minimum, you can either:
* Expand the number of relevant proposed contacts that are included in the Contact Optimization session.
* Examine the other rules in the Contact Optimization session to see whether they are too restrictive.

Tracking contacts

To configure contact fatigue rules, you must properly configure how you track contacts.

When managing contact fatigue rules such as the Max # of Packages rule, Contact Optimization automatically uses the contact history that is recorded in the Campaign system tables. In Campaign, each "contact" recorded into contact history

is recorded with a specific "contact status." The contact status is specified when configuring the contact process. You can update contact statuses by using the Track process. For example, you can update a "Contacted" status to "Undeliverable." You customize the contact statuses for your particular implementation. The `UA_ContactStatus.CountsAsContact` field determines whether communication with a particular contact status value counts as a contact from the Contact Optimization contact fatigue perspective. Contact Optimization considers contacts only where `UA_ContactStatus.CountsAsContact` is 1.

For more information about configuring contact statuses, see the *IBM Campaign Administrator's Guide*. For more information about populating contact status with the Mail List or Track process, see the *IBM Campaign User's Guide*.

Rule types

Optimization rules fall into one of three categories: Capacity, Exclude/Include, and For Each Customer (FEC).

The following sections define each rule type and list the available rules of that type.

Capacity

This rule type specifies the minimum and maximum number of contacts that can occur on a particular channel over a rolling time period. For example, setting a maximum for offer X can specify that it cannot be given out more than 1,000 times over a seven-day period, and that the scope of the constraint is all customers. This category contains the following rules:

- **Custom capacity**. Additional constraints that you can specify based on an aggregation (sum or average) of a score field. For example, a bank that gives out loan offers might specify that the average "risk score" must be below a certain threshold.
- **Min/Max # offers**. Offer capacity rule that allows you to specify a minimum or maximum number of offers to send over a rolling time period. For example, a telecommunications company might limit the number of free cell phone offers given in any 30-day period to 100,000.

    You can add Rule Exceptions to Min/Max # Offers rules if you need to change the capacity for a particular time period.

Exclude/Include

This rule type determines whether Contact Optimization includes or excludes a contact in the optimized contact list. Use this type of rule to apply global exclusions, opt-in and opt-out lists, or to ensure that particular customers do not receive particular types of offers. This category contains the following rules:

- **Customers in**. Allows you to specify that customers in a specific strategic segment can or cannot receive particular offers. For example, a financial institution might want to exclude credit offers to individuals with low credit ratings.
- **Interactions where**. Allows you to include or exclude specific transactions that are based on any attributes in the proposed contacts table (PCT). For example, a retailer might want to exclude proposed transactions with a score less than or equal to zero from being delivered.

For Each Customer (FEC)

This rule type determines the contact strategy on a per-customer basis. That is, it determines how your organization communicates with each customer over time. For example, setting a maximum of Y offers, determines that each customer is allowed only Y offers over a specified time period. This category contains the following rules:

- **B only with A**. Sequencing rule that specifies offer B might be sent only after offer A. For example, a mortgage company might specify that a call center representative might initiate a follow-up call only after the initial mortgage offer has been sent by direct mail.
- **Max # duplicate offers**. Rule that controls the maximum number of times you present the same offer to the same recipient over a specified time period. For example, an online web retailer might want to present any given cross-sell offer a maximum of seven times to a web customer over a six-month period.
- **Max # packages**. Contact-fatigue control that prevents over-communicating with customers by controlling the number of different packages (or interruptions) allowed to any recipient over a specified time period. For example, a hotel chain might want to limit the number of communications to their low value customers to a maximum of one per quarter.
- **Min/Max # offers**. Offer capacity rule that allows you to specify a minimum or maximum number of offers to give to a particular segment on a channel over time. For example, a collectibles company might want to limit the dilution of multiple offers by targeting their best customers with at least 3 and at most 25 different offers in any given 30-day period.
- **Never A followed by B**. Sequencing rule that prevents certain offers from following too closely after other offers. For example, a bank might want to ensure adequate spacing between sending a high-interest certificate of deposit (CD) offer to a customer after sending them a credit-limit decrease notification.
- **Never A with B**. Offer-conflict resolution rule that prevents two conflicting offers (or sets of offers) from ever being given together within a specified time period. For example, a retailer might want to prevent a "$10 off a purchase of $100 on the web" offer and a "$20 off a purchase of $100 in-store" offer from going to the same individual within the same month.

Rule scope

The scope of a rule is the set of proposed contacts that are affected by that rule, which can be specified by using various dimensions such as customer, offer, channel, cost, and time. The following table shows which scopes are available with each rule.

Table 1. Rule scope

	Include/ Exclude	Chan- nels	Offer/ Offer lists	Offer attri- butes	PCT colu- mns	Seg- ments	Time	Chan- nel B	Offer/ Offer lists B	Offer attri- butes B	Min count	Max count
B only with A		X	X	X		X		X	X	X		
Custom capacity		X	X	X	X							
Customers in	X	X	X	X		X						
Interactions where	X				X							

Table 1. Rule scope (continued)

	Include/ Exclude	Chan-nels	Offer/ Offer lists	Offer attri-butes	PCT colu-mns	Seg-ments	Time	Chan-nel B	Offer/ Offer lists B	Offer attri-butes B	Min count	Max count
Max # duplicate offers		X	X	X		X	X					X
Max # packages		X				X	X					X
Min/Max # offers capacity		X	X	X			X				X	X
Min/Max # offers FEC		X	X	X		X	X				X	X
Never A followed by B		X	X	X		X	X	X	X	X		
Never A with B		X	X	X		X	X	X	X	X		

B Only With A rule

Use the B Only With A rule to ensure that you do not send a follow-up offer unless you send the original offer.

Contact Optimization cannot send Offer B unless it also sends an offer A. When Contact Optimization uses an offer set for offer B, the rule applies to any offer that matches the set. When you use an offer set for offer A, any offer within that set satisfies the requirement for all proposed offer Bs. In other words, a single original offer allows any number of follow-up offers. This rule allows you to control sequencing of related offers. For example, to specify that you send offer B to a recipient only if offer A is also sent to the recipient. This rule allows you to manage follow-up waves of communication within your optimization strategy.

Marketing studies show that the lift achievable with two linked communications can be more successful than either individual communication. For example, a direct mail piece followed by a service representative call. The B Only With A rule allows you to propose linked offers and ensure that offer B is only given to a recipient if they also receive offer A. Therefore, allowed combinations would include giving out offer A only or offers A and B together, but not offer B alone. For example, to first make an offer using direct mail and then follow up using a telemarketing call, create the telemarketing call as Offer B and the direct mail as Offer A. If Contact Optimization determines that the customer cannot receive the direct mail, then this rule automatically eliminates the telemarketing call that was paired with it.

If you have two offers, Offer1 and Offer2, which must be sent together or not at all, you can create two B only with A rules. Create one rule as Offer1 only with Offer2 and the other rule as Offer2 only with Offer1. Contact Optimization delivers both of the offers or neither of them. In this scenario, Contact Optimization ensures that sufficient contact opportunities exist on the required channels to send both Offer1 and Offer2. Contact Optimization also ensures that the combination of offers (as opposed to other alternative offers that can be given on those channels instead) together are optimal.

Use this rule when one offer must always precede another.

The scope of the B only with A rule is always the current optimization period. That is, Contact Optimization considers only the proposed contacts within the Contact Optimization session. Contact Optimization does not give out offer B if offer A was given out in the past. This rule ensures that offer B is selected only if offer A is also selected within the proposed transactions that are considered during the current Contact Optimization session. This rule does not look at contact history to see whether offer A was received in the past.

Definitions for the B Only With A rule

Detailed description of the values to enter when configuring the B Only With A rule, including examples.

Table 2. B Only with A rule field definitions

Field	Values
Each customer in segment	• **Any customer** applies the rule to all customers. • *Segment Name* limits the rule to customers in the segment you select.
can receive an offer from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
concerning offer/offer list	• **Any Offer** specifies that Contact Optimization consider all offers and offer lists for this field. • **Offer/Offer list** limits this field to the offer or offer list you select. • **Offer Versions** limits the rule to offers that contain the offer attribute values you specify in the query builder, including parameterized offer attributes. **Note:** This offer is the prerequisite offer for the follow-up offer. When you select an offer list in this field, any offer within that list satisfies the requirement for any follow-up offer proposed.
only if they receive an offer from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
concerning offer/offer list	• **Any Offer** specifies that Contact Optimization consider all offers and offer lists for this field. • **Offer/offer list** limits this field to the offer or offer list you select. This offer is the prerequisite offer for the offer in the second offer field. When an offer list is selected in this field, any offer within that list satisfies the requirement for any offer proposed in the second offer field. • **Offer Versions** limits the rule to offers containing the offer attribute values you specify in the query builder, including parameterized offer attributes. **Note:** This offer is the follow-up offer. When you use an offer list for the follow-up offer, the rule applies to every offer in that list that is given to the customer.

Examples of the B Only With A rule

"Each customer in segment *New Customers*, can receive an offer from channel *Email* concerning offer/offer list *Follow Up* only if they receive an offer from channel *Email* concerning offer/offer list *Initial*." This rule ensures that customers in the New Customers segment are not sent a Follow Up offer unless they are sent an Initial offer.

"Each customer in segment *Any Segment*, can receive an offer from channel *Telemarketing* concerning offer/offer list *FreeNightAtDisney* only if they receive an offer from channel *DirectMail* concerning offer version *Destination = Orlando, Florida*." This rule assumes that the air travel offers have a parameterized attribute called destination. This rule ensures that only customers sent an offer with a destination of Orlando, Florida receive the free night at the Walt Disney World resort offer.

Related concepts:

"Segments in optimization rules" on page 49

"Offer lists in optimization rules" on page 50

"Offer versions in optimization rules" on page 52

Related tasks:

"Using a segment in an optimization rule" on page 50

"Using an offer list in an optimization rule" on page 51

"Using offer versions in your optimization rule" on page 55

Custom Capacity rule

The Custom Capacity rule allows you to build your own constraints that are based on the sum or average of a column in your PCT.

This rule is flexible and can be used in many situations. For example, you can use this rule to keep a Contact Optimization session within a budget. Create a Custom Capacity rule where the sum of a CostPerOffer column in the PCT must be less than or equal to 10,000. This rule defines that all the offers given out must cost less than $10,000.

You can also use this rule to limit the range of offers given out. For example, create a Custom Capacity rule where the average of the APR of the offer is greater than or equal to 7. This rule ensures that you do not give out too many offers with a low APR.

Definitions for the Custom Capacity rule

Detailed description of the values to enter when configuring the Custom Capacity rule, including examples.

Table 3. Custom Capacity rule field definitions

Field	Value
Sum or average	• **Sum** specifies that Contact Optimization adds the values of the PCT column before comparing it to the value. • **Average** specifies that Contact Optimization takes the average of the values in the PCT column before comparing it to the value. **Note:** While you are using the values from the PCT, the sum or average is based on the values in the final OCT.
of the PCT column	The name of a numeric column in the PCT you want to constrain your Contact Optimization session by.
should be	Select an operator to compare the PCT column to the value: less than or equal to or greater than or equal to.
the value	A positive number to which you compare the sum or average of the PCT Column. The number can be an integer or decimal.

Table 3. Custom Capacity rule field definitions (continued)

Field	Value
concerning offer/offer list	**Any offer** applies to all offers. *Offer/offer list* narrows the rule to the specific offer or offer list you select. *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.
from channel	**Any channel** applies to offers regardless of delivery channel. *Channel name* narrows the rule to those offers on the channel you specify only.

Examples of the Custom Capacity rule

"The *Sum* of the *CostPerOffer* should be <= the value *100000* concerning the offer/offer list *Any Offer* from channel *Any Channel*." This rule limits the budget of the entire campaign (any offer on any channel) to $100,000.

"The *Sum* of the *RiskScore* should be <= the value *100* concerning the offer/offer list *Any Offer* from channel *Any Channel*." This rule limits the amount of risk your business is exposed to by your campaign.

"The *Average* of the *APR* should be >= the value *8* concerning the offer/offer list *CreditOffers* from channel *Any Channel*." This rule prevents giving out only low interest rate offers to ensure profitability.

"The *Sum* of the *CostPerOffer* should be <= the value *20000* concerning the offer/offer list *Offer Version: All CampaignName = SpringSale* from channel *Any Channel*." This rule limits the budget for any offer where the parameterized offer attribute CampaignName equals SpringSale to $20,000. This rule requires that you configure the offer to use a derived field or a Campaign generated field to pass the Campaign name to the offer. Using offer versions, you can create Contact Optimization sessions that span campaigns and constrain the budget for each campaign individually.

Related concepts:

Related tasks:

Customers In rule

This rule allows you to include or exclude contacts that are based on strategic segments that are defined in Campaign.

You can refine the scope of this rule to affect only a particular channel or a particular offer or offer lists that are defined in Campaign.

Use this rule to enforce global suppression across all participating campaigns. For example:

- To create 'do not contact' lists or to support global control groups (can be channel-specific).
- To prevent customers who have opted-out of a channel from receiving messages on that channel.
- To prevent customers with a particular characteristic from receiving an offer. For example, preventing customers who are in default from receiving the highest value offers.

You might have a segment that is called "DoNotCall" representing the highest value customers that request not to be contacted by phone. Use this rule to ensure all individuals in the "DoNotCall" segment do not receive any telemarketing offers.

Definitions for the Customers In rule

Detailed description of the values to enter when configuring the Customers In rule, including examples.

Table 4. Customers In rule field definitions

Field	Value
This Contact Optimization session should	**Exclude** removes those contacts that meet the criteria that follow. **Include** keeps all proposed contacts that belong to the selected segment. It also keeps remaining contacts not belonging to selected segments, and not matching the offer, channel, and offer version criteria. It does not exclude contacts that do not meet the criteria. If you select **Any Customer**, then all proposed contacts are kept, regardless of offer, channel, and offer version criteria.
customers in the segment	**Any customer** applies the rule to all customers. *Segment Name* limits the rule to customers in the segment you select.
for offers from channel	**Any channel** applies to offers regardless of delivery channel. *Channel name* narrows the rule to those offers on the channel you specify only.
concerning offer/offer list	**Any offer** applies to all offers. *Offer/offer list* narrows the rule to the specific offer or offer list you select. *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.

Examples of the Customers In rule

"This Contact Optimization session should *Exclude* customers in the segment *OptOutTable* for offers from channel *Any Channel* concerning offer/offer list *Any Offer*." This rule removes all proposed contacts for any customers in the OptOutTable.

"This Contact Optimization session should *Include* customers in the segment *GoodCreditRating* for offers from channel *Any Channel* concerning offer/offer list *Credit Offers*" This rule ensures that only customers in the GoodCreditRating segment receive Credit Offers, regardless of channel.

"This Contact Optimization session should *Exclude* customers in the segment *DoNotCall* for offers from channel *Call Center* concerning offer/offer list *Any Offer*" If you create a segment called DoNotCall containing all customers who filled out a form that said they did not want any solicitation calls, you can exclude them from receiving any offers delivered by the Call Center channel.

"This Contact Optimization session should *Include* customers in the segment *Email* for offers from channel *Email* concerning offer/offer list *Any Offer*." This rule ensures that the optimized contact list contains only email offers for those customers in the Email segment.

"This Contact Optimization session should *Include* customers in the segment *HighCreditScores* for offers from channel *Any Channel* concerning offer/offer list *Platinum Cards*." This rule ensures that the optimized contact list gives only platinum card offers only to customers in the HighCreditScores segment.

"This Contact Optimization session should *Include* customers in the segment *Any Customer* for offers from channel *Any Channel* concerning offer/offer list *Platinum Card Email with Expiration Date > 1/30/07*." This rule ensures that the optimized contact list contains only platinum card email offers that expire after 1/30/07.

Related concepts:

Related tasks:

Interactions Where rule

The Interactions Where rule allows you to include or exclude contacts that are based on any criteria available in the PCT data.

Use this rule to use specific customer, campaign offer, channel, cost, or time criteria to suppress specific proposed offers. These criteria come from the same tables you would use in Campaign. This rule is especially useful when you do not have an explicit segment to suppress. It also provides much greater flexibility and is powerful in implementing complex suppressions.

This rule gives you direct access to optional fields included in the Contact Optimization template table and the proposed contacts table (PCT). For example, you can use an Interactions Where rule to prevent customers whose percentage of returned products exceeds 10% from receiving discount offers. This rule requires that the Contact Optimization template table that is used for the Contact Optimization session contains a variable that represents the percent of returned products. This variable must be populated by each of the participating campaigns for each submitted audience ID.

Definitions for the Interactions Where rule

Detailed description of the values to enter when configuring the Interactions Where rule, including examples.

Table 5. Interactions Where rule field definitions

Field	Value
This Contact Optimization session should	• **Exclude** removes those offers that meet the criteria that follow. • **Include** keeps only those offers that meet the criteria that follow.
Interactions where	Narrows the inclusion or exclusion to the offer criteria you specify in the query builder.

Examples of the Interactions Where rule

"This Contact Optimization session should *Exclude* interactions where *CustomerValue < 100 and OfferValue > 10 and Channel = Phone*." This rule ensures that high-value offers are not given to low-value customers using an expensive communication channel (phone).

"This Contact Optimization session should *Include* interactions where *Score >= 10*." This rule ensures that the optimized contact list contains only those proposed offers with a value greater than or equal to ten in the Score field.

Max # Duplicate Offers rule

Use the Max # Duplicate Offers rule to limit the number of times a customer receives the same offer in a time period from a channel.

You can create a single Max # Duplicate Offers rule for all offers in an offer set. For example, create a Max # Duplicate Offers rule for a set of offers. Set a max of 0, then each customer can get only one of any offer. There are zero duplicates, but an individual can get many different offers.

Use this rule to limit the number of duplicate offers that might be given to the same individual, potentially over different channels. You can prevent duplicates of any offer by creating a smart offer list in Campaign representing all offers. For example, you can use this rule to ensure that if you send a customer an offer through email, you do not send the customer the same offer in regular mail within a one-month period.

Definitions for the Max # Duplicate Offers rule

Detailed description of the values to enter when configuring the Max # Duplicate Offers rule, including examples.

Table 6. Max # Duplicate Offers rule field definitions

Field	Value
For each customer in segment	• **Any customer** applies the rule to all customers. • *Segment Name* limits the rule to customers in the segment you select.
the number of duplicate offers from the channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.

Table 6. Max # Duplicate Offers rule field definitions (continued)

Field	Value
over the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers (also considering offers given in contact history) to exceed 3 in any 30-day window. This "sliding window" interpretation of the time period allows you to truly control your offer presentation strategy. • **0** represents "this optimization period." This option sets the minimum and maximum number of offers made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used. The entire optimization period is considered as a single time window. In addition, contact history is not considered.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.
should not exceed	Limits the maximum number of duplicate offers that can be sent to each customer to the value you enter. If you set this value to one, the customer receives at most two, that is one duplicate, of the same offer. Use zero to eliminate the possibility of duplicate offers.

Examples of the Max # Duplicate Offers rule

"For each customer in segment *High Value Customers*, the number of duplicate offers from the channel *Any Channel* over the time period *30* days concerning offer/offer list *Any Offer* should not exceed *4*." This rule allows only four of the same offer to be in the optimized contact list for any high-value customer during any 30-day period.

"For each customer in segment *Any Customer*, the number of duplicate offers from the channel *Direct Mail* over the time period *30* days concerning offer/offer list *Any Offer* should not exceed *2*." This rule allows only two of the same offer to be in the optimized contact list for each customer during any 30-day period.

"For each customer in segment *Any Customer*, the number of duplicate offers from the channel *Any Channel* over the time period *30* days concerning offer/offer list *Brokerage Product* should not exceed *3*." This rule allows no more than four (one original and three duplicates) of the same Brokerage Product offers to be in the optimized contact list for each customer in any 30-day period.

"For each customer in segment *Any Customer*, the number of duplicate offers from the channel *Any Channel* over the time period *90* days concerning offer/offer list *Brokerage Product = free consultation* should not exceed *2*." This rule allows no more than three of the free consultation Brokerage Product offers (one original and two duplicates) to be in the optimized contact list for each customer in any 90-day period.

Related concepts:

"Segments in optimization rules" on page 49

"Offer lists in optimization rules" on page 50

"Offer versions in optimization rules" on page 52

Related tasks:

"Using a segment in an optimization rule" on page 50

"Using an offer list in an optimization rule" on page 51

"Using offer versions in your optimization rule" on page 55

Max # Packages rule

Use the Max # Packages rule to prevent contact fatigue. Define the maximum number of packages or interruptions that any customer receives over a particular time period.

By managing contact fatigue, you can avoid possible opt-outs or customer backlash. Multiple instances of this rule can be used to construct a contact strategy that ensures spacing of communications, without over inundating your customers or prospects with too many messages. In Campaign, packages are all contacts that are made to the same audience entity in the same contact process in the same flowchart run. Packages represent interruptions. Configure contact processes in Campaign to adhere to this definition if you use contact fatigue rules in Contact Optimization.

You can define the Max # Packages rule for a particular channel. You might also limit the scope of your rule to a segment.

Use this rule to help manage a contact strategy to prevent contact fatigue by controlling the number of "interruptions" or packages that are sent to each customer. It is an important rule that can prevent over-communicating with your customers. For example, you can define a rule to limit the maximum number of packages that are sent to high-value customers to 3 over any 30-day period.

Note: Packages are defined in Campaign. All offers sent to the same customer through the same contact process are considered a single "package" delivered on the same channel at the same time. For example, a package represents multiple coupons in a coupon book or multiple offers within the same email. Flowcharts that are created in Campaign must adhere to this practice. That is, separate contact processes must be used for communications on different channels or for offers given to the same individual at different points in time. Conversely, if multiple offers are delivered in a single "package" to a recipient, those offers must all be assigned within the same contact process.

Definitions for the Max # Packages rule

Detailed description of the values to enter when configuring the Max # Packages rule, including examples.

Table 7. Max # Packages rule field definitions

Field	Value
For each customer in segment	• **Any customer** applies the rule to all customers. • *Segment Name* limits the rule to customers in the segment you select.
over the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers (also considering offers given in contact history) to exceed 3 in any 30-day window. This "sliding window" interpretation of the time period allows you to truly control your offer presentation strategy. • **0** represents "this optimization period." This option sets the minimum and maximum number of offers made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used. The entire optimization period is considered as a single time window. In addition, contact history is not considered.
the number of packages from the channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
should not exceed	Limits the maximum number of packages that can be sent to each customer to the value you enter.

Examples of the Max # Packages rule

"For each customer in segment *Recent Accounts*, over the time period *30* days, the number of packages from the channel *Any Channel* should be between minimum *0* and maximum *2*." This rule limits the contacts in the optimized contact list so that the number of packages for each customer who recently opened accounts is no more than two in any 30-day period.

"For each customer in segment *Any Customer*, over the time period *30* days the number of packages from the channel *Email* should be between minimum *0* maximum *5*." This rule ensures that the number of email packages any customer receives is limited to five for any 30-day period.

Related concepts:

"Segments in optimization rules" on page 49

Related tasks:

"Using a segment in an optimization rule" on page 50

Min/Max # Offers Capacity rule

Use the Min/Max # Offers Capacity rule to set capacity constraints. Define the maximum and minimum number of offers that are sent across customers, or for a particular offer, channel, or rolling time period.

You can add an exception to this rule if you need to change the capacity for a particular time period. For example, you can change the call capacity of a call center around holidays.

Use this rule to control the usage of an offer or channel over some rolling time period. A rolling time period is a number of days, such as seven days. Which seven days depend on when the Contact Optimization session runs. For example, between January 1 and January 7 if run on January 1, and between January 2 and January 8 if run on January 2.

To control the number of offers given to an individual, see the "Min/Max # Offers For Each Customer rule" on page 42.

Note: Avoid using offer capacity constraints whenever possible, as these constraints reduce the optimality of the overall solution. If you must use offer capacity constraints, try to use either a minimum or a maximum instead of both. If you must use both a minimum and a maximum, avoid using close minimum and maximum values, such as setting the minimum equal to the maximum. Such a narrow range reduces the degree of flexibility Contact Optimization has to optimize.

You might want to limit the number of free cell phone handsets you give away to existing customers who upgrade to a premium monthly plan. You can create an offer capacity rule that limits the maximum number of "Free cell phone with 2-year premium subscription" offers to 20,000.

If you do not have enough number of offers for satisfying a Capacity rule, this causes a generation loop error. If you set ContinueOnGenerationLoopError to True and you receive an error, the customers from the set that caused the error are marked as unprocessable. It is possible that Contact Optimization might have violated some rules and generated this result without honoring all rules and data. For more information about the generation loop error, see Offer Filtering Summary report.

Related tasks:

"Adding a Rule Exception to a Min/Max # Offers capacity rule" on page 60

Related reference:

"Definitions for Rule Exceptions" on page 60

"Offer Filtering Summary report" on page 100

Definitions for the Min/Max # Offers Capacity rule

Detailed description of the values to enter when configuring the Min/Max # Offers Capacity rule, including examples.

Table 8. Min/Max # Offers Capacity rule field definitions

Field	Value
Total number of offers from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
over the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers (also considering offers given in contact history) to exceed 3 in any 30-day window. This "sliding window" interpretation of the time period allows you to truly control your offer presentation strategy. • **0** represents "this optimization period." This option sets the minimum and maximum number of offers made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used. The entire optimization period is considered as a single time window. In addition, contact history is not considered.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.
should be between	• **minimum** allows you to specify the minimum number of offers you want to be sent. Contact Optimization optimizes offers so that at least this number of offers are given out, if possible, given the constraints. **Note:** It might not be possible to achieve the minimum. For example, you have a rule specifying that a minimum of 10,000 of offer X must be given out. You cannot achieve this minimum in either of the following situations: – The PCT contains fewer than 10,000 contacts. – There are not 10,000 contacts in the PCT eligible for the offer, for example the contacts are limited by Never A with B rules. Contact Optimization gives out as many offers as possible, given the constraints. • **maximum** allows you to specify the maximum number of offers you want to be sent. This number is the maximum number of this type of specific offer/channel or offer list/channel combination that Contact Optimization allows within the specified time period.

Saving the Min/Max # offers capacity rule

If you want to add, edit, or remove a Rule Exception from the rule page, you must save the rule first.

- **Save**. Save this rule. You remain on the rule page. Use this option when you want to add or edit a rule exception.
- **Save and return**. Save this rule and return to the rule summary page.
- **Revert**. Undo your changes and return to the last saved version of the rule. This action does not undo changes to rule exceptions.
- **Cancel**. Do not save your changes and return to the rule summary page. This action does not undo changes to rule exceptions.

Rule Exceptions are saved in a separate dialog. If you click **Save** in the Add Rule Exception dialog, those changes are saved to the rule, regardless of your save actions on the rule page.

Examples of the Min/Max # offers capacity rule

"The number of offers from channel *Telemarketing* over the time period *1* day concerning offer/offer list *Any Offer* should be between *minimum 0 and maximum 3,000*." This rule limits the number of telemarketing calls in the optimized contact list to 3,000 per day.

"The total number of offers from channel *Any Channel* over the time period *30* days concerning offer/offer list *Platinum Cards* should be between *minimum 0 maximum 50,000*." This rule limits the number of platinum card offers in the optimized contact list to 50,000 over each rolling 30-day period.

"The total number of offers from channel *Telemarketing* over the time period *7* days concerning offer/offer list *Platinum Card*s should be between *minimum 5000 maximum 15000*." This rule causes Contact Optimization to include at least 5000 platinum card telemarketing calls and no more than 15,000 in the optimized contacts list over each rolling 7-day period.

"The total number of offers from channel *Any Channel* over the time period *30* days concerning offer/offer list *Offer version: All discount = 6* should be between *minimum 0 maximum 2000*." This rule limits the number of offers where the offer parameter discount equals 6. Offers where the offer parameter discount does not equal 6 are unlimited.

"The total number of offers from channel *Any Channel* over the time period *30* days concerning offer/offer list *Offer versions: Any*
- Shipping method = First Class Delivery
- Shipping method = Express Delivery

should be between *minimum 0 maximum 600*." This rule limits the number of offers where the offer parameter Shipping method equals First Class Delivery or Express Delivery. Other shipping methods such as Evening Delivery or Expedited Delivery are unlimited.

Related concepts:

"Offer lists in optimization rules" on page 50

"Offer versions in optimization rules" on page 52

Related tasks:

Min/Max # Offers For Each Customer rule

The Min/Max # Offers For Each Customer rule allows you to limit the number of offers that any one customer receives.

It can be used to help prevent dilution of messages and inundation with many offers, even if they are consolidated into few actual contacts and packages. For example, sending 50 different offers in a single email.

Note: This rule is different from the number of interruptions or "packages" that a customer receives. To manage customer contact fatigue, use the Max # of Packages rule instead.

You can define these constraints specific to a certain strategic segment, channel, or set of offers.

This rule allows you to manage the number of different messages you are sending to an individual. In particular, use this rule to control your customer offer strategy on a per-customer basis. Specifically, this rule controls the minimum and maximum number of offers, or a particular offer, to be given to an individual over a particular time period. Create this rule on a per channel basis to limit the number of different types of communications, such as cross-sell versus retention versus upsell.

By specifying a minimum, you might use this rule to ensure that varied marketing messages reach the customer. You might set the condition that, at most, two contacts to high-value customers are upsell or cross-sell offers, leaving one offer for retention.

You can also create a set of high-cost offers, then limit the number of times each customer can receive an offer from that set.

Definitions for the Min/Max # Offers For Each Customer rule

Detailed description of the values to enter when configuring the Min/Max # Offers For Each Customer rule, including examples.

Table 9. Min/Max # Offers For Each Customer rule field definitions

Field	Value
For each customer in segment	• **Any customer** applies the rule to all customers. • *Segment Name* limits the rule to customers in the segment you select.
the number of offers from the channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.

Field	Value
over the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers (also considering offers given in contact history) to exceed 3 in any 30-day window. This "sliding window" interpretation of the time period allows you to truly control your offer presentation strategy. • **0** represents "this optimization period." This option sets the minimum and maximum number of offers made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used. The entire optimization period is considered as a single time window. In addition, contact history is not considered.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.
should be between	• **minimum** allows you to specify the minimum number of offers that you want to send. Contact Optimization optimizes offers so that this number is reached. **Note:** As an FEC rule, if the minimum cannot be met for any particular individual, no offers are given to that recipient. • **maximum** allows you to specify the maximum number of offers that you want to send. **Note:** Try to avoid using close minimum and maximum values, such as a minimum of two and a maximum of three. Such a close range reduces the optimality of the solution.

Examples of the Min/Max # Offers For Each Customer rule

"For each customer in segment *Recent Accounts*, the number of offers from the channel *Any Channel* over the time period *30* days concerning offer/offer list *Any Offer* should be between minimum *0* and maximum *2*." This rule limits the contacts in the optimized contact list so that the number of offers for each customer who recently opened accounts is no more than two over any 30-day period.

"For each customer in segment *Any Customer*, the number of offers from the channel *Email* over the time period *30* days concerning offer/offer list *Any Offer*

should be between minimum *0* and maximum *5*." This rule ensures that the number of email offers in the optimized contact does not exceed five in any 30-day period for any customer.

"For each customer in segment *Any Customer*, the number of offers from the channel *Direct Mail* over the time period *30* days concerning offer/offer list *Gold Cards* should be between minimum *0* and maximum *3*." This rule ensures that the number of gold card mailings in the optimized contact list is limited to three for any 30-day period for any customer.

"For each customer in segment *Any Customer*, the number of offers from the channel *Direct Mail* over the time period *30* days concerning offer/offer list *Offer Version Expiration date = 1/30/07* should be between minimum *0* and maximum *3*." This rule ensures that the number of mailings for any offer with an expiration date = 1/30/07 is limited to three in any 30-day period for any customer.

Related concepts:

"Segments in optimization rules" on page 49

"Offer lists in optimization rules" on page 50

"Offer versions in optimization rules" on page 52

Related tasks:

"Using a segment in an optimization rule" on page 50

"Using an offer list in an optimization rule" on page 51

"Using offer versions in your optimization rule" on page 55

Never A Followed By B rule

Use the Never A Followed by B rule to prevent a customer who just received one offer from receiving another offer for a certain time period. It does not prevent the customer who received the second offer from receiving the first offer.

The Never A Followed by B rule is unidirectional, meaning that it enforces suppression of offers in one direction only. The Never A with B rule is bidirectional, meaning that offers are not allowed together regardless of sequence. You can refine the Never A Followed by B rule by customer segment, channel, and offer set.

Use this rule to ensure that the order of offers makes sense from a customer-service perspective. For example, break your offers into low and high tiers. Use this rule to enforce that customers who receive a high-tier offer cannot receive a follow-on low-tier offer within the same 30-day period.

The following are examples of particular constraints you can apply with this rule:

- Do not follow a better offer with a worse offer. For example, do not send an offer for 10,000 frequent flyer miles and then send an offer for 5,000 miles.
- Do not send a negative offer following a positive offer. For example, do not send a cross-sell offer a few days after you lowered a credit card credit limit.

Definitions for the Never A Followed By B rule

Detailed description of the values to enter when configuring the Never A Followed By B rule, including examples.

Table 10. Never A Followed by B rule field definitions

Field	Value
For each customer in segment	• **Any customer** applies the rule to all customers. • *Segment Name* limits the rule to customers in the segment you select.
that first receives an offer from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.
cannot later receive an offer from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
within the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers (also considering offers given in contact history) to exceed 3 in any 30-day window. This "sliding window" interpretation of the time period allows you to truly control your offer presentation strategy. • **0** represents "this optimization period." This option sets the minimum and maximum number of offers made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used. The entire optimization period is considered as a single time window. In addition, contact history is not considered.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.

Example of the Never A Followed By B rule

"For each customer in segment *All Segments*, that first receives an offer from channel *All Channels* concerning offer/offer list *Platinum Cards* cannot later receive an offer from channel *All Channels* within the time period *90* days concerning offer/offer list *Gold Cards*." This rule removes any gold card offers to a customer who first received a platinum card offer in the previous 90 days from the optimized contact list.

"For each customer in segment *All Segments*, that first receives an offer from channel *Any Channel* concerning offer/offer list *CreditLimitReduction* cannot later receive an offer from channel *Any Channel* within the time period *90* days concerning offer/offer list *CrossSellCreditCardInsurance*." This rule removes any offers for credit card insurance from customers who first received a Credit Limit Reduction notice in the previous 90 days.

Related concepts:

Related tasks:

Never A with B rule

Use the Never A with B rule to prevent a customer from receiving a pair of offers together within a certain time period.

You can refine this rule by customer segment, channel, and offer set.

Use this rule to prevent incompatible offers from being given to the same contact. By specifying offer sets, you can specify that none of the offers from the first set are given to the same recipient with any of the offers from the second set.

This rule helps ensure consistency of your messages to a customer, preventing conflicting offers from being sent to the same individual. If the customer consistently gets a specific type of offer, this rule ensures that the customer continues to get that type of offer. For example, you do not want to send conflicting new phone renewal versus upgrade phone plan offers to the same individual within a 60-day period. Write a rule that says "For each customer in All Segments, they cannot receive interaction A from All Channels concerning New Phone Renewals and interaction B from All Channels concerning Upgrade Phone Plans together within 60 days."

Definitions for the Never A with B rule

Detailed description of the values to enter when configuring the Never A with B rule, including examples.

Table 11. Never A with B rule field definitions

Field	Value
For each customer in segment	• **Any customer** applies the rule to all customers. • *Segment Name* limits the rule to customers in the segment you select.
that receives an offer from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.
cannot receive an offer from channel	• **Any channel** applies to offers regardless of delivery channel. • *Channel name* narrows the rule to those offers on the channel you specify only.
within the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers (also considering offers given in contact history) to exceed 3 in any 30-day window. This "sliding window" interpretation of the time period allows you to truly control your offer presentation strategy. • **0** represents "this optimization period." This option sets the minimum and maximum number of offers made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used. The entire optimization period is considered as a single time window. In addition, contact history is not considered.
concerning offer/offer list	• **Any offer** applies to all offers. • *Offer/offer list* narrows the rule to the specific offer or offer list you select. • *Offer Versions* narrows the rule to offer versions with the offer attributes you specify in the query builder. Use offer version to scope the rule to apply to only specific offer versions defined using parameterized offer attributes.

Examples of the Never A with B rule

"For each customer in segment *Wireless*, that receives an offer from channel *All Channels* concerning offer/offer list *New Phone Renewal* cannot receive an offer from channel *All Channels* within the time period *90* days concerning offer/offer list *Phone Plan Upgrade*." This rule removes any phone plan upgrade offer to a customer who received a new phone renewal offer in the previous 90 days from the optimized contact list.

"For each customer in segment *All Segments*, that receives an offer from channel *All Channels* concerning offer/offer list *Interest Rate > 10%* cannot receive an offer from channel *All Channels* within the time period *60* Days concerning offer/offer list *Interest Rate < 5%*." This rule removes any less than 5% interest rate offers to a customer who received a greater than 10% interest rate offer in the previous 60 days from the optimized contact list.

Related concepts:

"Segments in optimization rules" on page 49

"Offer lists in optimization rules" on page 50

"Offer versions in optimization rules" on page 52

Related tasks:

"Using a segment in an optimization rule" on page 50

"Using an offer list in an optimization rule" on page 51

"Using offer versions in your optimization rule" on page 55

Rule definitions

Rule definitions allow you to create the scope of a rule or to determine the action performed on that scope.

The scope of a rule is the set of proposed contacts that are affected by that rule. The scope can be specified by using various dimensions such as customer, offer, channel, and time.

For example, you define your scope as a set of contacts:

* Within a segment called Low Value
* Contacted through the email channel
* Include an offer for 10% off

You can define a For Each Customer Max # Offer rule to ensure that this set of contacts does not receive more than one of these communications a month.

This section contains three main rule definitions:

* Segments-for scoping the rule to pertain to specific customers and audience IDs

    Segments are available for the Customers In, Min/Max # Offers FEC, Max # of Packages, Max # Duplicate Offers, Min # Unique Offers, Never A with B, Never A Followed by B, and B only with A rules.
* Offer lists-for applying the rule to specific offers

Offer lists are available for the Customers In, Min/Max # Offers Capacity, Custom Capacity, Min/Max Total Cost, Min/Max # Offers FEC, Max # Duplicate Offers, Min # Unique Offers, Never A with B, Never A Followed by B, and B only with A rules.

- Offer versions-applying the rule only to specific versions of offers as defined by their offer attribute values

Offer versions are available for the Customers In, Min/Max # Offers Capacity, Custom Capacity, Min/Max # Offers FEC, Max # Duplicate Offers, Min # Unique Offers, Never A with B, Never A Followed by B, and B only with A rules.

Segments in optimization rules

You can perform an action on the segment you specify in the rule definition.

Some optimization rules allow you to specify a strategic segment in your rule definition. Strategic segments are created in Campaign and are available for use within Contact Optimization. A segment, or strategic segment, is a set of audience IDs (all at the same audience level) grouped in some meaningful way. For example, you can create a segment that is called Women that groups all female contacts. You can have another segment that is called High Value, which groups all contacts who spend over $1000 in the three months.

For example, create a rule that specifies that all High Value contacts receive at least three email offers every month.

Note: An optimization rule might apply to all customers or to a single strategic segment. To apply an optimization rule to multiple strategic segments, do one of the following actions:

- Create a new strategic segment that contains all the wanted contacts in Campaign
- Create multiple copies of the rule, one for each strategic segment to which it applies.

For more information about strategic segments, see the *IBM Campaign User's Guide*.

If you are using IBM Interact, smart segments cannot be used with Contact Optimization.

Related tasks:

Related reference:

Using a segment in an optimization rule

You can perform an action on the segment you specify in the rule definition.

1. Click **Segment** in the Rule definition section of an optimization rules page.

   A blank field and the **Select** button displays.
2. Click **Select**.

   The Add/remove segments window displays.
3. Select a segment.
4. Click **Accept and close**.

   The segment populates the **Segment** field. Contact Optimization applies the constraints of the segment when you run your optimization session.

Related concepts:

"Segments in optimization rules" on page 49

Related reference:

"Definitions for the Customers In rule" on page 33

"Definitions for the Min/Max # Offers For Each Customer rule" on page 42

"Definitions for the Max # Packages rule" on page 37

"Definitions for the Max # Duplicate Offers rule" on page 35

"Definitions for the Never A with B rule" on page 46

"Definitions for the Never A Followed By B rule" on page 44

"Definitions for the B Only With A rule" on page 30

Offer lists in optimization rules

Use offer lists in optimization rules to apply a single rule to more than one offer.

An offer list is a grouping of related offers that you can create for organizational purposes. Offer lists are defined in Campaign and are available within Contact Optimization when defining offers. There are two types of offer lists:

- **Static** offer lists. A pre-defined list of offers that does not change unless it is edited.
- **Smart** offer lists A dynamic list of offers. The content of a smart list changes when new offers that meet the criteria of the smart list are automatically added to it. Using a smart offer list allows you to specify the criteria that define the key characteristics of the offers that are important to the optimization rule.

For most cases, use smart offer lists in Contact Optimization. Smart offer lists are evaluated at the time the Contact Optimization session runs. Smart offer lists resolve to any offers within Campaign that currently satisfy the offer query. Static offer lists contain only the exact offers that are specified by the user when the static offer list was created. Static offer lists do not change over time unless modified.

For example, you have an offer list that is called Holiday Travel, which contains all offers for discounted airfare in December and January. You can create an optimization rule that limits the number of Holiday Travel offers an individual can receive in December to two.

If this offer list is static (and all other rule criteria remain the same), the same offers are included with each run of the Contact Optimization session. If this offer

list is a smart offer list, the offers that are included with each run of the Contact Optimization session can vary, depending on whether new offers were created that fulfilled the criteria of the smart offer list. In this case, a subsequent run of the Contact Optimization session would yield additional offers.

An example of a smart offer list might be "Loan offers". Define the smart list to include all offers in the folder "Loan product offers", and its subfolders. You can create a rule that limits any individual from receiving more than two loan offers in any given 60-day window. This rule would prevent the risk of individuals over-extending their credit by accepting multiple credit offers over a short time period. This smart offer list automatically includes any new loan product offers created. A Contact Optimization session run periodically using this rule would always have the most up-to-date list of loan product offers.

For more information about defining offer lists, see the *IBM Campaign User's Guide*.

Related tasks:

"Using an offer list in an optimization rule"

Related reference:

"Definitions for the Customers In rule" on page 33

"Definitions for the Min/Max # Offers Capacity rule" on page 39

"Definitions for the Custom Capacity rule" on page 31

"Definitions for the Min/Max # Offers For Each Customer rule" on page 42

"Definitions for the Max # Duplicate Offers rule" on page 35

"Definitions for the Never A with B rule" on page 46

"Definitions for the Never A Followed By B rule" on page 44

"Definitions for the B Only With A rule" on page 30

Using an offer list in an optimization rule

Use offer lists in optimization rules to apply a single rule to more than one offer.

1. Click **Offer** in the Rule definition section on an optimization rules page.

   A blank field and **Select** button displays.

2. Click **Select**.

   The Select offers window displays.

3. Select an offer list.

   Offer lists are identified by an icon with a picture of multiple offers . Smart

   offer list icons include a magnifying glass .

4. Click **Accept and close**.

The offer list populates the **Offer** field. Contact Optimization applies the constraints of the offer list when you run your Contact Optimization session.

Related concepts:

"Offer lists in optimization rules" on page 50

Related reference:

"Definitions for the Customers In rule" on page 33

"Definitions for the Min/Max # Offers Capacity rule" on page 39

"Definitions for the Custom Capacity rule" on page 31

Offer versions in optimization rules

Certain optimization rules allow you to specify offer versions as part of your rule definition. This feature allows you to write a query that determines the exact set of offer versions to which a particular rule applies.

For example, you have a "Gold credit card" offer with a parameterized attribute called "go_to_interest". Rather than applying a rule to any version of the "Gold credit card" offer, you want to apply it only to the versions of that offer where the "go_to_interest" rate is below the current prime rate. You can create a query that is based on any offer attributes and specify the exact versions of an offer that are included in the scope of the rule. For example, go_to_interest < 5.

An offer version is a unique instance of an offer that is created by using parameterized offer attributes. A parameterized offer attribute is an offer attribute for which a user can provide a unique value when the offer is used in a marketing campaign. Each unique permutation of offer attributes creates an offer version. For example, the "Gold credit card" offer has two parameterized offer attributes that are called "promo interest" rate and "go to interest" rate. The first offer attribute can have a value of 0% or 2.9% and the latter can be 18.9% or 21.9%. There can be a total of four offer versions created:

Table 12. Example offer versions

Promo interest	Go to interest
0%	18.9%
0%	21.9%
2.9%	18.9%
2.9%	21.9%

You can then write a rule that limits the number of 0% interest promo rate offers your company gives out in any given 30-day period. The values for a non-parameterized offer attribute are predefined as part of the offer.

For example, the Campaign administrator creates a parameterized offer attribute that is named Card Type in an offer template. When a user assigns the offer to a cell in Campaign (for example, in the Optimize process), that user provides a value for the offer attribute. For example, Gold or Silver, or any other value that makes sense.

In certain rules in Contact Optimization, you can then search for these offer versions. For example, you can create a Customers In rule whose scope includes all items of type Gold (Card Type=Gold). You include an offer version in your rule by using the offer versions query builder. The offer versions query builder allows you to choose the values for offer attributes to which the rule applies.

- For more information about parameterized offer attributes, see the *IBM Campaign Administrator's Guide*.
- For more information about offer versions, see the *IBM Campaign User's Guide*.

Related tasks:

"Using offer versions in your optimization rule" on page 55

Related reference:

"Definitions for the Customers In rule" on page 33

"Definitions for the Min/Max # Offers Capacity rule" on page 39

"Definitions for the Custom Capacity rule" on page 31

"Definitions for the Min/Max # Offers For Each Customer rule" on page 42

"Definitions for the Max # Duplicate Offers rule" on page 35

"Definitions for the Never A with B rule" on page 46

"Definitions for the Never A Followed By B rule" on page 44

"Definitions for the B Only With A rule" on page 30

Offer versions query builder

The offer versions query builder is a set of fields that allows you to select specific offers versions. The offer versions query builder is available in the Rule Definition section of some rule pages.

The criteria that you specify in the query builder, with other constraints such as time period, customer segments, and interaction channels, define the scope of the rule. The offer attributes used in the query builder specifies the exact offer versions to which a rule applies.

The offer attributes listed in the query builder can be standard or custom offer attributes. Standard offer attributes are predefined attributes that are relevant for many implementations of Contact Optimization. For example, Expiration Date, Cost per Offer, and Contact Channel. Custom offer attributes are offer attributes that you define in Campaign that are more specific to your industry. For example, Interest Rate, Annual Fee, Department, and Product SKU.

The offer attributes used to construct a query in the query builder might be parameterized attributes. As such, the query builder might return offers or offer versions. Offers are a marketing communication that is based on an offer template with no parameterized offer attributes. Offer versions are a marketing communication with one or more parameterized offer attributes that are customized by the user at the time the offer is assigned to a cell. However, the query builder is the only means by which you can access offer versions to include in the scope of your rule. If all versions of an offer are essentially the same, there is no need to differentiate between versions of an offer for optimization. However, if parameterized offer versions are used for personalization where the "meaning" of an offer is substantively different based on the value of the parameterized offer attributes, then your optimization rules might need to query by offer attributes to scope your rule appropriately. An example of a parameterized offer attribute that changes the essence of the marketing communication would be "Product SKU" where the item can be a TV for one individual and a refrigerator for another.

When you run a Contact Optimization session, the constraints you set by sing the query builder (along with other criteria you specified in all rules) help to determine which customers populate the optimized contacts table (OCT).

For more information about defining offer custom attributes, creating offers or offer templates, or on parameterizing offer attributes in Campaign, see the *IBM Campaign Administrator's Guide*.

Conditions and groupings

Conditions are an offer attribute, an operator, and a value. Groupings are sets of conditions.

Conditions

A condition consists of an offer attribute (which might be parameterized), an operator, and a value.

In the following query,

```
Expiration Date = 12/31/08
```

Expiration Date is the custom attribute, "=" is the operator, and 12/31/08 is the value.

The offer attribute list in the Contact Optimization query builder contains custom offer attributes defined in Campaign, and all standard attributes. You can use the attributes that are listed in any offer template that is defined in Campaign. If the offer attribute that you specify in the query builder is a parameterized value, then your query builder search can yield offer versions.

Table 13. Offer version query builder operators

Operator	Definition
=	Equal to
>	Greater than If used with a date, this operator signifies a date that falls after the date you specify. For example, Expiration date > 12/31/08, signifies a date after 12/31/08.
>=	Greater than or equal to If used with a date, this operator signifies a date that falls on or after the date you specify. For example, Expiration date >= 12/31/08, signifies a date on or after 12/31/08.
<	Less than If used with a date, this operator signifies a date that falls before the date you specify. For example, Expiration date < 12/31/08, signifies a date before 12/31/08.
<=	Less than or equal to If used with a date, this operator signifies a date that falls before or on the date you specify. For example, Expiration date <= 12/31/08, signifies a date on or before 12/31/08.
<>	Not equal to

Groupings

A grouping consists of one or more conditions that are preceded by an "any" or "all" statement. In a query, you select **all** or **any** from the **Select items where** list as follows:

- **all** to specify that the offer must meet each of the conditions presented. For example, you might want to locate offers that cost less than $5 and expire before or after 12/31/08.

  The all operator is equivalent to the AND operator, and can be represented as follows:

  ```
  (Grouping) AND (Grouping) ... AND (Grouping)
  ```

  where

  ```
  Grouping = (Condition) AND (Condition) ... AND (Condition)
  ```

- **any** to specify that the offer might fall into any of the conditions presented. For example, you might want to locate offers that have an item category of electronics or computers.

  The any operator is equivalent to the OR operator, and can be represented as follows:

  ```
  (Grouping) OR (Grouping) ... OR (Grouping)
  ```

  where

  ```
  Grouping = (Condition) OR (Condition) ... OR (Condition)
  ```

Offer versions query builder example

The following example illustrates how the query builder helps you to target contacts according to custom offer attributes.

You want your contact list to exclude contacts that meet all of the following conditions:

- An offer expiration date on or before 12/31/08
- A cost per offer greater than $10
- Channel is either Email or Phone.

In this example, the **all** operator is used to specify all offers to all contacts that meet all of the following conditions:

- A certain expiration date
- Cost more than a certain amount
- Sent using Email or Phone channels

All of these conditions must be met in order for the contact to be excluded from the proposed contacts table (PCT). Create a subgroup by using the **any** operator to define the particular types of channels that can be considered, Email or Phone.

Using offer versions in your optimization rule

Write a query that determines the exact set of offer versions to which a particular rule applies.

1. Click **Offer versions** in the Rule definition section of an optimization rules page.

   A default grouping displays.
2. Select an **all** or **any** operator from the **Select items where** list.
3. Specify the condition.

a. Select an offer attribute from the list in the first field of the condition.

b. Select an operator from the list in the second field of the condition.

c. Enter a value in the third field of the condition.

If you select a date-related offer attribute in the first field of the condition, you can select a date from a calendar.

The following are examples of completed conditions:

```
Effective Date <= 1/1/07
Item type = Clothing
Cost per offer >= 10
```

4. Optional: Add additional conditions or groupings to the query builder.

a. For every additional condition that you would like to add to a grouping, click **Insert a new condition**.

The new condition is added to the query builder.

b. Build any new conditions by selecting offer attributes, operators, and providing values.

c. For every additional grouping that you would like to add, click **Insert a new grouping**.

The new grouping is added to the query builder.

d. Select **all** or **any** for every new grouping.

This choice between all and any follows the same rules as the all or any choice for the entire Query Builder.

5. If you would like to remove a condition or grouping from the query builder, click the trash can icon beside the condition or grouping.

6. If you would like to move a condition or grouping, drag the condition or grouping to the location where you would like to place it. Drop it in the location after you see the green highlighted bar.

Contact Optimization applies the constraints that you have set by using the query builder when you run your Contact Optimization session.

Related concepts:

"Offer versions in optimization rules" on page 52

Related reference:

"Definitions for the Customers In rule" on page 33

"Definitions for the Min/Max # Offers Capacity rule" on page 39

"Definitions for the Custom Capacity rule" on page 31

"Definitions for the Min/Max # Offers For Each Customer rule" on page 42

"Definitions for the Max # Duplicate Offers rule" on page 35

"Definitions for the Never A with B rule" on page 46

"Definitions for the Never A Followed By B rule" on page 44

"Definitions for the B Only With A rule" on page 30

Smart lists and the offer versions query builder

Both smart offer lists and the offer versions query builder allow you to query based on any offer attribute. However, smart offer lists look only at the *default* value for any parameterized offer attribute. Therefore, smart offer lists do *not* apply to any offer versions, only offers.

You can include offers that are defined at the offer attribute level in an optimization rule. You can do this task in one of two ways: by using a smart offer list, or by using the offer versions query builder. The results of your search for a particular offer attribute with a particular value might vary depending on whether you use a smart offer list or the offer versions query builder.

Smart Lists

Smart lists are offer lists that are defined by queries at the offer attribute level. Static offer attributes use the value that is associated with the offer; parameterized offer attributes use the default value. Smart offer lists are best for querying against static offer attributes. You create a smart offer list in Campaign. Building a query that specifies the offer attributes and attribute values that you want form the scope of the smart offer list.

For example, create a smart offer list to group all offers of a certain value. This value is a static custom attribute that is associated with each offer. In particular, your smart offer list query specifies all offers with a value less than $1 (Offer Value < 1). You call the smart offer list Low Value Offers.

You can then include the Low Value Offers smart offer list in an optimization rule. For example, you create a Customers In rule that excludes all offers from the Low Value Offers offer list from an expensive channel such as the call center.

For more information about smart offer lists, see the *IBM Campaign User's Guide*.

Different results with the offer versions query builder

Alternately, you can use the offer versions query builder to query against an offer attribute that is parameterized. A parameterized offer attribute is, an offer attribute whose value can be changed each time that the offer is used, creating multiple offer versions. For example, to include offers with a cost per offer less than $1, where cost per offer is a parameterized offer attribute.

If the Cost per Offer attribute is not a parameterized offer attribute, the smart offer list and the offer versions query builder return the same results. However, if Cost per Offer is a parameterized offer attribute, the offers that Contact Optimization returns when you include offers less than $1 using the Low Value Offers smart offer list might differ from the results Contact Optimization returns when you search for offers with a cost of less than $1 using the offer versions query builder. This is because, when an offer attribute is parameterized, smart offer lists return results that are based on only the default offer attribute values. The offer versions query builder, however, can return results that are based on the actual parameterized values of offer attribute values that are parameterized, or, offer versions.

Note: Use the offer versions query builder if you want to include a parameterized offer attribute in the scope of your optimization rule.

See the *IBM Campaign User's Guide* for more information about smart offer lists.

Examples

For each example, the following data applies:

Table 14. Data for smart offer list and offer versions query builder example

Offer/Offer Version	Parameter	Parametrized Value	Default Value	Parameterized?
1	Cost per offer	$12	$7	Y
2	Cost per offer	---	$5	N
3	Cost per offer	$9	$10	Y

Smart offer list - You create a smart offer list that includes all offers that cost under $10. You include this smart list in an optimization rule. When you run the session, Contact Optimization returns offer version 1 and offer 2.

Offer versions query builder - You create a query in the Contact Optimization offer versions query builder that specifies all offers that cost under $10. When you run the session, Contact Optimization returns Offer 2 and Offer 3.

This discrepancy is because the smart offer list does not search for parameterized values, or offer versions, while the query builder does. Therefore, the offer versions query builder is able to consider the parameterized value of $9 for offer version 3, while the smart offer list considers only its default value of $10.

Retired offers and offer lists

Offer or offer lists that are retired in Campaign can no longer be used in Contact Optimization.

Retired offers or offer lists are displayed disabled in the user interface and are noted with "(retired)" next to the offer name. Specifically, they are displayed disabled in the Select Offers window when you choose an offer or offer list for use in an optimization rule.

Offers that are used in optimization rules can be then retired. Contact Optimization sessions are considered valid, even if they have rules that depend on retired offers. However, you cannot create new optimization rules by using retired offers.

Contact Optimization prefaces rules that contain retired offers or offer lists with the word "Warning" on the Rules tab. You can edit these rules to eliminate the reference to retired offers or offer lists or delete these rules if they are no longer necessary.

For more information about retired offers and offer lists, see the *IBM Campaign User's Guide*.

Details for working with rules

This section explains how to add, edit, and delete rules in your Contact Optimization session.

You can add an unlimited number of rules to your session. The rules that you create define the criteria by which the set of final (optimized) contacts are determined.

After you perform a production run, if you find that a rule did not perform the way that you expected, you can edit your rule.

You can delete a rule that you no longer use. Deleting a rule has no effect on other rules.

Creating a rule

Follow these procedures to create, edit, or delete an optimization rule.

1. Click **Add** beside the rule type that you want to create from the **Rules** tab of your Contact Optimization session.

   The *rule type* page displays.

2. Complete the fields.

   See the rule description for details on the fields for each rule.

3. Click **Save**.

The rule is added to the list of rules of that type on the **Rules** tab.

To edit a rule, click the rule that you want to edit from the **Rules** tab of your Contact Optimization session.

To delete a rule, click the **Delete** icon beside the rule that you would like to delete from the **Rules** tab of your Contact Optimization session. The rule is permanently removed from the list of rules and is no longer included in the Contact Optimization session. Deleting a rule has no effect on other rules within the session or on any rule in any other Contact Optimization session. There is no way to restore a rule after you delete it from a Contact Optimization session.

Contact Optimization session rule general reference

The generic fields available when you create or edit an optimization rule. Fields specific for each type of rule are defined in the definitions for rule type sections.

Table 15. Optimization rule general fields

Field	Description
Rule name	Enter a name for this rule, up to 64 characters in length. This name displays on the **Rules** tab. This name follows the same character restrictions as Campaign objects. For more information about the restrictions, see the *IBM Campaign User's Guide*. Keep rule names unique within a Contact Optimization session.
Comments	(Optional) Enter a description of this rule.
Rule definition	The fields in this section vary according to rule type. See the specific rule for a description of the fields that are associated with each rule type.

Optimization Rule Exceptions

Use rule exceptions for your Min/Max # Offers capacity rule to adjust for changes over a limited time period.

From time to time, you might need to change some of your Min/Max # Offers capacity rules for a particular time period. For example, during the summer

months, you might have less staff because of vacations. Therefore, you want to decrease the number of marketing telephone calls required per week during the summer months. However the rest of the Contact Optimization session settings do not need to change. Similarly, over the holiday period, you might augment staff, thus increasing available capacity.

To adjust the rule, add a Rule Exception to your Min/Max # Offers capacity rule. You can change the capacity minimum and maximum for a specific time period or set of dates with a Rule Exception.

Rule Exceptions work with Min/Max # Offers capacity rules only. Rule Exceptions are effective when the time period in the parent rule is greater than zero only.

Related tasks:

"Adding a Rule Exception to a Min/Max # Offers capacity rule"

Related reference:

"Definitions for Rule Exceptions"

"Offer Filtering Summary report" on page 100

Adding a Rule Exception to a Min/Max # Offers capacity rule

Click the **Add a Rule exception** link in the Rule Exception area below the Rule Definition area on a capacity rule page.

This option is available after you add a time period to your capacity rule. You must save the rule before you can add, edit, or remove the exception.

You can have up to five Rule Exceptions per capacity rule.

You can view, edit, and remove Rule Exceptions from both the rule and the Contact Optimization session rules summary page.

When you save the rule exception, changes to the rule exception are saved regardless of your save actions for the Min/Max # Offers capacity rule. For example, you save changes to a rule exception, and then click **Cancel** on the rule definition page. Your rule exception changes are saved to the rule.

Related concepts:

"Min/Max # Offers Capacity rule" on page 39

"Optimization Rule Exceptions" on page 59

Related reference:

"Definitions for Rule Exceptions"

"Offer Filtering Summary report" on page 100

Definitions for Rule Exceptions

Use the following fields when you define a rule exception for a Min/Max # Offers capacity rule.

Table 16. Rule exception fields

Field	Value
over the time period	• *A time period you specify* applies the rule to all time periods with the specified duration. The duration is a number of days. In other words, the rule must be true for any time period specified. For example, you create a rule that says a maximum of 3 offers can be sent to any customer in a 30-day period. Contact Optimization does not allow any optimized offers, including offers already given in contact history, to exceed 3 in any 30-day window. This "sliding" or "rolling" window interpretation of the time period allows you to control your offer presentation strategy. • **0** represents "this optimization period." This value sets the minimum and maximum number of offers that are made over the entire time range for proposed contacts across all participating campaigns in this Contact Optimization session. That is, between the earliest and latest proposed dates in the PCT. When a value of zero is used, no sliding windows are used (The entire optimization period is considered as a single time window). In addition, contact history is not considered. You might rarely select 0 for the time period because Contact Optimization session time periods are often much greater than the exception.
For multiple days	Select the start and end date for this exception. For a single day, select the same start and end date, for example Jan 1, 2011-Jan 1, 2011. Select **this exception should reoccur every year for these dates** if appropriate. For example, if you have less staffing on New Year's Day every year, select this check box. This check box works for the dates that are specified only, such as January 1. It does not work for specific days, such as the third Thursday of November. In this case, you need to set the appropriate dates every year. The current date is highlighted in the start date and end date calendar by default if both the values are not present. The first time that you set the start date, if you set the end date, the end date is highlighted. The first time that you set the end date, if you set the start date, the start date is highlighted.
Should be between	Enter the minimum and maximum capacities for this rule exception. The default values are inherited from the parent rule. These values follow the same rules as the parent rule, for example, it might not be possible to meet the minimum constraint.

Examples of Rule Exceptions

In a Min/Max # Offers rule for a telemarketing operation, you might want to increase the number of phone calls made per week during the winter holiday season.

Parent Rule: "The number of offers from channel *Telemarketing* over the time period *7 day* concerning offer/offer list *Any Offer* should be between minimum *0* and maximum *2,000*."

Rule Exception: "Over the time period *7* for multiple days starting *December 1, 2011* AND ending *December 24, 2011* should be between minimum *1500* and maximum *3500*." This rule increases the number of calls made between December 1st and December 24th. **This exception should reoccur every year for these dates** is selected because the start date does not change every year.

In a Min/Max # Offers rule for an email marketing campaign, you might want to decrease the number of emails sent immediately after the winter holiday season.

Parent Rule: "The number of offers from channel *email* over the time period *30 day* concerning offer/offer list *Any Offer* should be between minimum *0* and maximum *30*."

Rule Exception: "Over the time period *30* for multiple days starting *January 1, 2011* AND ending *January 31, 2011* should be between minimum *0* and maximum *15*." This rule decreases the number of emails that are sent during the month of January to decrease contact fatigue after the holiday season. **This exception should reoccur every year for these dates** is selected because the start date does not change every year.

Related concepts:

"Min/Max # Offers Capacity rule" on page 39

"Optimization Rule Exceptions" on page 59

Related tasks:

"Adding a Rule Exception to a Min/Max # Offers capacity rule" on page 60

Optimization rule example

You need to understand how to apply these rules to actual optimization problems. Many business problems require several rules that work together to achieve the wanted behavior.

Maximizing customer value

Problem: To propose the best offers to your customers while:
- Keeping within the budget
- Keeping within the limitations of your call center and email server capacities
- Without breaking any internal offer rules

You know that you get the highest response when someone calls the customer personally. However, a phone call is the most expensive way to deliver an offer. The call center can make a maximum of 5,000 calls a week and the email servers can send 5 million outbound emails a day. Direct mail gets a better response than email, but the mailing is more than 10 times as expensive as an email offer. You quantified these return rates in a score field you created by multiplying response rate by profitability. The cost of these offers is contained in the CostPerOffer attribute.

You also must abide by the wants of your customers. Your customers can choose to opt-out of any or all of your contact channels.

You have multiple offers, but some offers cannot be sent in combination. For example, you do not want to send an offer for free online banking to the same

person you send an offer for free checking. In addition, you do not want to send a worse offer for the same product or service after a better offer. Finally, you do not want to overload customers with the same offer.

These problems can be solved by a single Contact Optimization session. The following rules show one possible solution.

Ensure that you are not violating the wants of your customers by creating Exclude/Include rules that enforce opt-out (or opt-in) choices.

- Create Customer In rules for each channel to enforce customer selections for opt-out programs.

  This Contact Optimization session should Exclude customers in the segment Direct Mail Opt-Out List for offers from channel DirectMail concerning offer/offer list Any Offer.

  This Contact Optimization session should Exclude customers in the segment eMail Opt-Out List for offers from channel email concerning offer/offer list Any Offer.

  This Contact Optimization session should Exclude customers in the segment Call Opt-Out List for offers from channel CallCenter concerning offer/offer list Any Offer.

  This Contact Optimization session should Exclude customers in the segment Global Opt-Out List for offers from channel Any Channel concerning offer/offer list Any Offer.

Define your limitations. You have a limit on the amount of money you can spend, the number of calls you make, and the number of emails you send. Use the following capacity rules:

- Create a Min/Max # Offers Capacity rule limiting the number of telemarketing offers per week.

  The number of offers from channel CallCenter over the time period 7 days concerning offer/offer list Any Offer should be between minimum 0 and maximum 5,000.

- Create a Min/Max # Offers Capacity rule limiting the number of emails sent per day.

  The number of offers from channel email over the time period 1 days concerning offer/offer list Any Offer should be between minimum 0 and maximum 5,000,000.

- Create a Custom Capacity rule to ensure that the campaigns are within budget.

  The Sum of the CostPerOffer should be <= the value 1,500,000 for transactions from the offer/offer list Any Offer from channel Any Channel.

Define your offer guidelines. You can use the For Each Customer rules to ensure correct sequencing.

- Create a Never A with B rule ensuring free online banking and free checking offers are not sent to the same person.

  For each customer in segment All Segments, that receives an offer from channel All Channels concerning offer/offer list FreeOnlineBanking cannot receive an offer from channel All Channels within the time period 90 days concerning offer/offer list FreeChecking.

- Create a Never A Followed by B rule ensuring that no one receives a worse credit card offer (Gold APR) after a better credit card offer (Platinum APR).

For each customer in segment All Segments, that first receives an offer from channel All Channels concerning offer/offer list Platinum Cards cannot later receive an offer from channel All Channels within the time period 90 days concerning offer/offer list Gold Cards.

Ensure that you are not creating contact fatigue. You can use For Each Customer rules to enforce your requirements.

- Create Min/Max # Offers For Each Customer rules limiting the number of contacts you send to a customer per channel. By creating two rules for each channel, you can ensure that contacts within the time period are spaced appropriately. If you only had one rule limiting the number of contacts to two per time period, the contacts can happen on the same day.

  For each customer in segment Any Customer, the number of offers from the channel email over the time period 7 days concerning offer/offer list Any Offer should be between minimum 0 and maximum 2.

  For each customer in segment Any Customer, the number of offers from the channel email over the time period 3 days concerning offer/offer list Any Offer should be between minimum 0 and maximum 1.

  For each customer in segment Any Customer, the number of offers from the channel CallCenter over the time period 14 days concerning offer/offer list Any Offer should be between minimum 0 and maximum 2.

  For each customer in segment Any Customer, the number of offers from the channel CallCenter over the time period 7 days concerning offer/offer list Any Offer should be between minimum 0 and maximum 1.

- Create a Max # Duplicate Offers rule to ensure that each customer is given a different offer when contacted over a time period.

  For each customer in segment Any Customer, the number of duplicate offers from the channel Any Channel over the time period 30 days concerning offer/offer list Any Offer should not exceed 1.

Optimizing a set of offers

Another way to use Contact Optimization is to optimize the generation of a personalized set of coupons.

Problem: You want to send a personalized selection of coupons to your customers. However, you must stay within budget constraints and not violate any internal rules or agreements with your suppliers.

As in the previous example, you need to work within a budget. You need to ensure that a coupon booklet mailed to a customer contains enough coupons to be worth mailing. At the same time, must ensure that every customer receives the selection of coupons only once. You also have restrictions that are based on agreements with your suppliers with contractual minimums and maximums. In addition, certain suppliers do not want their offers given with offers from competitors.

Ensure that you are not violating the wants of your customers by creating Exclude/Include rules that enforce opt-out (or opt-in) choices.

- Create Customer In rules for each channel to enforce customer's selections for opt-out programs.

  This Contact Optimization session should Exclude customers in the segment Direct Mail Opt-Out List for offers from channel DirectMail concerning offer/offer list Any Offer.

Define your limitations. You have a limit on the amount of money you can spend, and you also need to include any supplier limitations. These limitation issues can be solved with capacity rules:

- Create Min/Max # Offers Capacity rules for any offers for which you have a limited number to give out. Only one rule example is shown here, where an actual situation contains dozens.

  Total number of offers from channel Any Channel over the time period 30 days concerning offer/offer list CompanyC should be between minimum 1000 and maximum 5000.

- Create a Custom Capacity rule to ensure that the entire campaign is within budget.

  The Sum of the CostPerOffer should be <= the value 3,000,000 for transactions from the offer/offer list Any Offer from channel Any Channel.

Define your offer guidelines. You can use the For Each Customer rules to ensure that no internal guidelines are broken. Only one rule example for each type of rule is shown here, where an actual situation contains dozens.

- Create Never A with B rules to ensure that conflicting offers are not sent to the same person.

  For each customer in segment All Segments, that receives an offer from channel All Channels concerning offer version Brand = CompanyA cannot receive an offer from channel All Channels within the time period 30 days concerning offer version Brand = CompanyB.

- Create Max # Duplicate Offers rules to ensure that each customer receives only one of each type of product.

  For each customer in segment Any Customer, the number of duplicate offers from the channel Any Channel over the time period 30 days concerning offer version ProductType = ProductA should not exceed 1.

Ensure that you are not sending out more than one selection of coupons and that each set of coupons is worth sending. You can use a combination of For Each Customer rules to enforce your requirements.

- Create Min/Max # Offers For Each Customer rules ensuring defining the number of coupons that can be sent to each customer.

  For each customer in segment Any Customer, the number of offers from the channel DirectMail over the time period 30 days concerning offer/offer list Any Offer should be between minimum 6 and maximum 12.

- Create a Max # Packages rule to ensure that each customer receives only one set of coupons.

  For each customer in segment Any Customer over the time period 30 days the number of packages from the channel Any Channel should not exceed 1.

Chapter 5. Setting up scores

You use scores in IBM Contact Optimization to rank possible offers for each customer using a patent-pending optimization algorithm. The higher the score you assign to a contact, the more desirable you are making that contact. Contact Optimization maximizes the sum of scores in the OCT.

Scores are numeric values that you provide. A higher score represents a more desirable contact. If Contact Optimization must choose one offer over another to use in a campaign, it can select the offer with the higher score.

Scoring defines your key marketing objectives. Virtually any marketing objective (potential value, revenue, profit, exposure, probability of response) can be used in the optimization.

During optimization, Contact Optimization maximizes the sum of scores of the surviving or optimized contacts, which are based on the optimization rules and constraints.

You can set up scores in Contact Optimization using one of the following methods:

* Pass scores into Contact Optimization using a score field. Use the score field when you want Contact Optimization to assign one score per contact automatically from a field in the database.
* Manually enter scores by using the score matrix. Use the score matrix when you want to rank offers relative to each strategic segment.

Scores can be positive, negative, integer, or decimal. Scores should be greater than or equal to 1 or less than or equal to -1. If you use negative scores, contacts with a negative score are used to fulfill minimum requirements only.

Important: Your range of scores must be within 100,000 of each other. For example, your scores can range from 1 to 99,999 or from -50,000 to 50,000. If your range of scores is greater than 100,000, Contact Optimization might violate capacity rules.

Configure a Contact Optimization session to use a score field from the PCT

The optimization algorithm requires scores. Use a score field that is populated by each of the Optimize process boxes into the proposed contacts table (PCT). This method provides the most granular scores, personalized to each individual.

Each flowchart that participates in the Contact Optimization session needs to populate the designated score field. You must populate the field by using a common, agreed-upon score metric that represents the "value" of each offer for each contact.

The score field can be populated by using the results of a predictive model or based on rules. The score field passes scores into Contact Optimization, one score per proposed contact.

The ScorePerOffer field is part of every PCT and is commonly populated by Optimize processes for passing a score for each proposed contact to Contact Optimization. This field is always populated in the PCT if Campaign users use the Scoring tab of the Optimize process. The values that populate the ScorePerOffer field are typically taken from a field in the database. The values can also be a derived field that calculates a value that is based on other database fields.

Note: If ScorePerOffer is blank, the value of Cost per Offer is assigned to ScorePerOffer.

The ScorePerOffer field is the only score field available by default. To make other fields available as a score field to your PCT, you must add numeric fields to your optimization template table. Any numeric field added to your optimization template table can be used as a score field for a Contact Optimization session.

Using a score for each contact provides higher return on investment than a constant score for all members of a segment receiving a specific offer. You can use this less granular method by configuring the score matrix, or some derived fields. The more granular scores that are provided by a score field are often generated through predictive models that are used to score each offer. Generating scores from a database allows you to implement scoring across any number of dimensions. For example, the behavior of a customer with respect to a particular offer on a particular channel at a specific time.

You can generate model scores with IBM SPSS® Modeler Advantage Enterprise Marketing Management Edition or any other predictive modeling software.

Scores can be positive or negative. If you use negative scores, contacts assigned a negative score are used only when meeting minimum constraints. Whether the score can be an integer or a decimal is defined when you create the score field in your template table. The ScorePerOffer field is a float type. All numeric limits of the database that contain your system tables apply.

Related concepts:

"Create template tables" on page 14

"Contact Optimization template table" on page 7

Related tasks:

"Assigning score fields in the Optimize process" on page 83

Related reference:

"Optimize process Score tab reference" on page 83

Configuring Contact Optimization to use a score field from the PCT

You can configure Contact Optimization to use a score field from the PCT.

1. Go to the **Scoring** tab of your Contact Optimization session.
2. Click **Edit scores**.
3. Click **Use score field**.
4. In the **Score field** list, select the PCT field that contains scores for Contact Optimization.

   You must use the **ScorePerOffer** field if you are using the **Score** tab of the Optimize process to pass scores to Contact Optimization.
5. Click **Save**.

The **Scoring** tab displays the scoring method and the score field you chose.

Manually enter scores using the score matrix

If you do not have predictive models to generate scores, you can rank offers relative to each strategic segment by manually entering scores in the score matrix.

The score matrix allows you to manage centrally scores within a Contact Optimization session.

You can enter scores for certain offers with certain strategic segments, or you can enter scores for all offers with all strategic segments. If you configure Contact Optimization to uses score from the score matrix, any scores from the score field or PCT are ignored.

The score that you enter can be any numeric value, and can represent any metric of interest to your organization: revenue, profit, net profit, probability of response, potential value, expected value, customer loyalty, or brand loyalty. The higher the score you assign to a contact, the more desirable you are making that contact. Contact Optimization maximizes the sum of scores in the OCT. The size of the score is limited by the float type of your database.

Offers and strategic segments are created and managed in Campaign. For more information, see the *IBM Campaign User's Guide*.

You can specify which offers and strategic segments are available on the score matrix in your Contact Optimization session.

Empty cells

Contact Optimization automatically generates a score for a cell that you leave empty.

Automatically generated scores do not display in a cell when the score matrix is in edit mode. These scores display as disabled values after you save the score matrix.

Contact Optimization automatically populates a cell as follows:
- If a cell in the All Offers row or the All Customers column does not contain a value, Contact Optimization populates that cell with the value in the intersection of All Offers and All Customers. For example, in the score matrix, the value at the All Offers/All Customers intersection is 10. No values were entered in the intersection of All Offers and strategic segments C4 and C7. Therefore, Contact Optimization populates these cells with the value 10. Similarly, no values were entered in the intersection of All Customers and the Gold offer or the B offer. These cells also inherit the value at the All Offers/All Customers intersection, or 10.
- For all other empty cells, the score is calculated as the average of the values in the column and row headers for that cell. For example, Contact Optimization computes the value for the intersection of the Gold offer and strategic segment C1 to be 25. This value is the average of the value in the row header for the Gold offer, and the value in the column header for strategic segment C1, that is $(10 + 40)/2$.

You can override any automatically generated cell values by entering a new value for that cell.

Contacts that belong to more than one strategic segment

In general, Contact Optimization selects the first value for a contact that belongs to multiple strategic segments.

Contact Optimization determines the score for a contact that belongs to more than one strategic segment as follows:

- If none of the strategic segments are included in the score matrix, the score for the contact is the score in the All Offers/All Customers intersection. The default value for the All Offers/All Customers intersection is 0. You can, however, enter another value for this cell.
- If only one of the strategic segments is in the score matrix, the score for the contact is the score in the included strategic segment. Specifically, the score is found at the intersection of the offer that is associated with the contact, and the included strategic segment.
- If more than one of the strategic segments is included on the score matrix, the score for the contact is that in the first (or, left-most) strategic segment in the score matrix. For example, take the following score matrix:

Table 17. Example score matrix

	All Customers	C4	C1	C7
All Offers	10.0	10.0	40.0	10.0
Gold	10.0	10.0	25.0	10.0

A contact belongs to both strategic segment C4 and C1 and that contact is to receive the Gold offer. The score that is assigned to that contact is 10, the score found at the intersection of the Gold offer and the first strategic segment the contact belongs to (C4).

Entering scores manually using the score matrix

If you are not supplying scores from the Optimize process or a column in your PCT, complete the score matrix.

1. Go to the **Scoring** tab of your Contact Optimization session.
2. Click **Edit scores**.

   The **Scoring method** page displays.
3. Click **Manually enter score matrix**.

   The score matrix displays.
4. Click the cell in which you want to enter a score and enter a value for the cell.

   Contact Optimization automatically inserts or calculates a value for a cell that you leave empty.
5. Repeat this step for every cell for which you want to add a score.
6. Click **Save**.

The **Scoring** tab displays. This tab shows the scoring method and the score matrix with the values you entered and values that Contact Optimization automatically computed.

Limiting offers and strategic segments in the score matrix

You can control which offers and strategic segments you include in the score matrix.

You can include a subset of the offers and strategic segments that you include in your optimization rules. Selecting a subset of offers and strategic segments makes it easier to enter and review your scores. Even if you include only a subset in your score matrix, all offers and strategic segments in your Contact Optimization session are included in the optimization process.

To see the updated score matrix, go to the Scoring tab and make sure that the **Manually enter score matrix** option is selected.

Selecting offers and strategic segments

You can limit and reorder the offers and strategic segments available in the score matrix and the Offers by Type and Segment report.

1. Navigate to the **Summary** tab of your Contact Optimization session.
2. Click either of these options:
   - **Displayed offers**
   - **Displayed segments**

   The **Displayed offers** or **Displayed segments** section expands.
3. Click either of these options:
   - **Edit displayed offers**
   - **Edit displayed segments**

   The **Displayed offers** or **Displayed segments** page displays.
4. Select the offers or strategic segments that you want to include.

   You can select multiple offers or segments by using **Shift+Click** or **Ctrl+Click**.
5. Click the right-pointing double arrows to move the offers or strategic segments to the **Included offers** or **Included segments** section.
6. To change the order of the offers or strategic segments, select the items that you want to move and use the upward-pointing or downward-pointing arrows.
7. Click **Save**.

   The **Summary** tab displays.

Chapter 6. Generate a list of proposed contacts

The optimization process involves generating a list of proposed contacts in IBM Campaign and sending these contacts to IBM Contact Optimization to produce optimized contacts.

These optimized contacts are then retrieved by Campaign for use in a marketing campaign.

Generating a list of proposed contacts requires that you create a flowchart with one or more Optimize processes in Campaign. This flowchart is called the pre-optimization flowchart. When you configure the Optimize process, you must select a Contact Optimization session to associate with the flowchart. This Contact Optimization session receives the proposed contacts that are generated when you run the flowchart.

After you run all flowcharts in all campaigns that are configured to generate contact and offer information for a particular Contact Optimization session, you can run that optimization session. The Contact Optimization session then applies the rules that you created to produce a list of optimized contacts that are retrieved by a post-optimization flowchart in Campaign. The post-optimization flowchart in Campaign might sample out a hold-out control group, generate the contact list, and populate contact history.

Create a flowchart with an Optimize process

When you create a flowchart to generate proposed contacts for optimization, you must include a data manipulation process and an Optimize process.

The data manipulation process, such as the Select or Extract process, passes the proposed contacts to the Optimize process. When you configure the Optimize process, you specify which Contact Optimization session receives those contacts.

You can have more than one data manipulation process feeding contacts to an Optimize process. All contacts that are passed from a data manipulation process make up a cell. For example, you have two Select processes in your flowchart that are connected to a single Optimize process. The contacts from Select1 form one cell, and those contacts from Select2 form another.

In addition, each Optimize process forms a unique package. A package is an important concept for Contact Optimization, since it represents a single interruption. All offers presented to a recipient within a single "package" (Optimize process) are counted as a single interruption for contact fatigue purposes. By definition, all communications in a single package occur at the same time, that is, on the same contact date, and from the same channel. If you need to send communications on different dates or by using different channels, you must use more than one Optimize process. From the previous example, contacts from both Select1 and Select2 form the same package since they are all within the same Optimize process.

You can have more than one Optimize process in your flowchart. With multiple Optimize processes, you can send the same contacts to multiple Contact

Optimization sessions. For example, if you have one optimization session per channel or offer type, or use one flowchart to generate multiple packages.

Creating a flowchart with an Optimize process

You need a data manipulation process and an Optimize process to create a pre-optimization flowchart.

1. Create a flowchart in Campaign by using the logic that you normally use. Instead of adding a contact process, such as Mail List, Call List, or eMessage

   process, add an Optimize process .

   For more information about creating a flowchart in a campaign, see the *IBM Campaign User's Guide*.
2. Connect the data manipulation processes to the Optimize process.

The target control spreadsheet and pre-optimization flowcharts

You can use the target control spreadsheet (TCS) with Contact Optimization.

If you assign offers to cells with the TCS and link the cells in your flowchart to the TCS, Contact Optimization uses the cell-offer assignments in the Optimize process.

For more information about using the TCS, see the *IBM Campaign User's Guide*.

If you are using the TCS in a IBM Marketing Operations campaign project, the Optimize process is enforced like any contact process box because it assigns offers. Therefore, all cells and offers used in an Optimize process must be pre-defined and approved in the TCS before they are allowed to run in production.

For more information about using the TCS with a Marketing Operations campaign project and a post-optimization flowchart, see the *IBM Marketing Operations and Campaign Integration Guide*.

Configure the Optimize process

The Optimize process is where you define what information is sent to the optimization session, including which cells, which offers, and which scores.

To configure the Optimize process, you must configure the following.

1. Select the cells for input as described in "Selecting the cells for input" on page 75.
2. Assign a contact date as described in "Assigning a contact date to all contacts" on page 75.
3. Assign offers to cells as described in "Assigning offers or offer lists to a cell" on page 76.

   You can optionally define parameterized offer attributes as well.
4. Associate the process with a Contact Optimization session as described in "Specifying a Contact Optimization session" on page 80.

   You can optionally map additional columns to the PCT.
5. Assign scores as described in "Assigning score fields in the Optimize process" on page 83.

The following sections describe these procedures and the Optimize process in detail.

The Optimize process Assignment tab

Assign the cells, date, and offers for the Optimize process.

You perform the following tasks in the Assignment tab:
- Select the cells that are passed into the Optimize process.
- Set a date for when the contacts in the Optimize process receive the marketing communications (packages).
- Assign offers (or offer lists) to the cells in the Optimize process.

Note: The contact date for all cells in the Optimize process is the same. Since all contacts associated with an Optimize process are a single package, the date for these contacts must be the same.

Related tasks:

"Selecting the cells for input"

"Assigning offers or offer lists to a cell" on page 76

Related reference:

"Optimize process Assignment tab reference" on page 77

Selecting the cells for input

The Optimize process can use one or more input cells, selecting all or any subset of the cells that are connected to it. Selected cells can be assigned one or more offers, ultimately writing proposed contacts to the proposed contacts table (PCT) in the specified optimization session.

1. Click the **Assignment** tab in the Optimize process.

   The **Assignment** tab displays.
2. If you want to select a single cell as input, select the cell from the list in the **Input** field.

   The cell name shows in the **Cell name** column on the **Assignment** tab.
3. If you want to select multiple input cells, do the following steps:
   a. Select **Multiple cells** from the list in the **Input** field.

      The **Select cells to use** window displays.
   b. Click the check box beside the cells you want to select as inputs into the Optimize process.
   c. Click **OK**.
4. Click **OK** to save your process configurations.

Related concepts:

"The Optimize process Assignment tab"

Related reference:

"Optimize process Assignment tab reference" on page 77

Assigning a contact date to all contacts

All communications that are made through a single Optimize process share the contact date, since they represent a single package or interruption.

You can choose one of the following options for your contact date:
- A contact date in the future, when the communication is planned for delivery.
- The default contact date, which is the flowchart run date.

To send different communications on multiple contact dates, you must use more than one Optimize process. Different contact dates, by default, mean different interruptions (packages).

1. Click the **Assignment** tab in the Optimize process.

   The **Assignment** tab displays.
2. Enter the date on which you want the contacts to be contacted in the **Contact date** field.

   You can click the calendar ![calendar icon] button in this field to select the date from a calendar.

   Note: If you leave the **Contact date** field empty, the default contact date is the date that the flowchart is run.

Assigning offers or offer lists to a cell

Similar to a contact process, you assign one or more offers to each selected input cell in the Optimize process.

You choose the proposed offers to give to each cell, which are written to the proposed contacts table (PCT).

Note: If you link cells that are created in the flowchart to cells created top-down in the TCS, and assigned offers to cells in the TCS, Contact Optimization assigns offers by using the data in the TCS and populates the Assignment tab.

1. Click the **Assignment** tab in the Optimize process.

   The **Assignment** tab displays.
2. Click the cell name in the **Cell name** column.

   The cell name is highlighted.
3. Click **Assign offers**.

   The **Assign offers** window displays.
4. From the **Available offers** section, select every offer or offer list that you want to add, and click **Add**.

   You can select multiple offers by using **Shift+Click** or **Ctrl+Click**. You can also click the downward pointing arrow in the Offer column to select offers from a list.
5. Click **OK** to save your process configurations.

The **Assign offers** window closes. If you selected one offer or offer list, the name of the offer or offer list shows in the Offer column. If you selected more than one offer or offer list, the words `Multiple Offers` shows in the **Offer** column. The number of offers or offer lists you select displays in parentheses after `Multiple Offers`.

Related concepts:

"The Optimize process Assignment tab" on page 75

Related reference:

"Optimize process Assignment tab reference" on page 77

Optimize process Assignment tab reference

The Assignment tab requires the following information.

Table 18. Optimize process Assignment tab reference

Field	Description
Input	Select one or more input cells.
Cell name	Lists the names of the input cells you selected.
Offer	Lists the names of the offers or offer lists you associate with a cell. If you select one offer or offer list, the name of the offer or offer list shows in this column. If you select more than one offer or offer list, the words `Multiple Offers` shows here. The number of offers or offer lists you select is in parentheses after `Multiple Offers`. **Note:** You cannot specify parameterized offer attribute values for any offers within an offer list.
Assign offers	Assign offers and offer lists to a cell.

Related concepts:

"The Optimize process Assignment tab" on page 75

Related tasks:

"Selecting the cells for input" on page 75

"Assigning offers or offer lists to a cell" on page 76

The Optimize process Parameters tab

Use the Parameters tab to work with parameterized offer attributes.

Use the Parameters tab to perform the following tasks:

- Select the cells for which you want to specify parameterized offer attribute values
- Assign values to parameterized offer attributes.

Static and hidden offer attributes do not show on the Parameters tab. Only parameterized offer attributes of offers you select for cells show on the Parameters tab.

The following steps track the lifecycle of parameterized offer attributes from creation to the Parameters tab.

1. A campaign administrator creates an offer template, and parameterizes certain offer attributes. For example: Logo, Cost per Offer, and APR. The administrator provides default values for the parameterized offer attributes. For example: Silver for Logo, $5.00 for Cost per Offer, and 7.99 for APR.
2. A user creates PlatinumCard, GoldCard, and SilverCard offers based on this offer template. The user keeps the default values for parameterized offer attributes in each offer.
3. The campaign administrator configures the Optimize process as follows:
   a. On the Assignment tab, assigns the PlatinumCard, GoldCard, and SilverCard offers to various cells.
   b. On the Parameters tab, does the following for the Gold offer:

- Assigns the value Gold to the Logo offer attribute
- Assigns the value $9.00 to the Cost per Offer attribute
- Maps the APR to a derived field that subtracts 1.00 from the customer's existing APR

  c. On the Parameters tab, does the following for the Platinum offer:
- Assigns the value Platinum to the Logo offer attribute
- Assigns the value $12.00 to the Cost per Offer
- Maps the APR to a derived field that subtracts 1.55 from the customer's existing APR.

  d. On the **Parameters** tab, for the Silver offer, maps the APR to a derived field that subtracts 0.50 from the customer's existing APR.

Now, when users assign any of the Gold, Platinum, or Silver offers to cells, the values for the parameterized offer attributes are defined as appropriate.

Related tasks:

"Selecting the cells for which you want to specify parameterized offer attribute values"

"Assigning values to parameterized offer attributes" on page 79

Related reference:

"Optimize process Parameters tab reference" on page 79

Selecting the cells for which you want to specify parameterized offer attribute values

After you assign offers to each input cell, you can specify the value to use for any parameterized attributes of those offers.

Each offer is listed with its parameterized attributes, if any, on the **Parameters** tab. If there are multiple input cells, you can assign parameterized attribute values for one cell at a time, or for all cells simultaneously.

1. Click the **Parameters** tab in the Optimize process.

   The **Parameters** tab displays.
2. Select the cell from the list in the **For cell(s)** field, or select **[All cells]**.
3. Click **OK** to save your process configurations.

The **Parameters** tab is populated with the default parameterized offer attribute values, which you entered when you created the offer.

You assign the same offer `Gold credit card` to two input cells: High-value customers and Low-value customers. You can use a different interest rate, a parameterized offer attribute, for each cell. In this case, you choose the High-value customer cell and set the Interest rate to `12.9%`, a more attractive offer. You also set the interest to `18.9%` for low-value customers. If you want to set the same interest rate for the Gold credit card offer for all cells, you can set the Interest rate value at one time for **[All cells]**.

Related concepts:

"The Optimize process Parameters tab" on page 77

Related reference:

"Optimize process Parameters tab reference" on page 79

Assigning values to parameterized offer attributes

The parameterized offer attributes for each offer are listed on a separate line on the **Parameters** tab. You can specify a different value for each parameterized attribute.

If you select a single cell, you see the offers assigned to that cell. If you select **[All cells]**, you see offers assigned to any of the input cells. Any parameterized offer attributes that are associated with these offers display, each on its own line. If the same offer attribute is associated with two different offers, it displays twice, one time for the first offer and one time for the second offer.

1. Click the **Parameters** tab in the Optimize process.

   The **Parameters** tab displays.

2. Click the cell in the **Assigned value** column that corresponds to the parameterized offer attribute for which you want to specify a value.

3. Assign a value:

   a. If you want to specify a constant value, enter a value.

   b. If you want to automatically generate a value from a database field, select the table field by using the list in the cell.

   The value for the parameterized offer attribute is automatically generated from this field when you run the Contact Optimization session.

4. Click **OK** to save your process configurations.

Related concepts:

"The Optimize process Parameters tab" on page 77

Related reference:

"Optimize process Parameters tab reference"

Optimize process Parameters tab reference

The Parameters tab requires the following information.

Table 19. Optimize process Parameters tab reference

Field	Description
For cells	Select one or more input cells.
Offer	Lists the names of the offers that contain the parameterized offer attributes.
Parameter name	Lists the names of the parameterized offer attributes.
Assigned value	Enter values for the parameterized offer attributes, or select a database field or derived field that automatically generates a value when you run the Contact Optimization session.
Derived field	Create a variable for querying, segmentation, sorting, calculations, or output to a table. Derived fields are new variables that do not exist in a data source and are created from one or more existing fields, even across different data sources. For more information about derived fields, see the *IBM Campaign User's Guide*.

Related concepts:

Related tasks:

The Optimize process Optimize tab

On the Optimize tab, you specify which Contact Optimization session you send the proposed contacts to when you run the flowchart and map any unmapped PCT fields.

Note: You are able to specify only one Contact Optimization session per Optimize process. To send the proposed contacts to multiple Contact Optimization sessions, you must include multiple Optimize processes.

Related tasks:
"Specifying a Contact Optimization session"
Related reference:

Specifying a Contact Optimization session

You must specify the Contact Optimization session in which you are participating in each Optimize process.

The Contact Optimization session that you choose applies its optimization rules to your proposed contacts, along with the proposed contacts from any other participating campaigns or flowcharts, and generate a single optimized contacts list.

1. Click the **Optimize** tab in the Optimize process.

   The **Optimize** tab displays.

2. In the **Participate in Contact Optimization session** field, click the ellipsis button.

   The **Select Contact Optimization session** window displays.

3. Select the Contact Optimization session that receives the proposed contacts.

   If the Contact Optimization session has an optimization template table, the fields show in the **Table field** column of the **Export fields** section.

4. Click **OK** to save your process configurations.

Related concepts:
"The Optimize process Optimize tab"
Related reference:

Mapping additional table fields required by the PCT

The Optimize process automatically passes required data to the proposed contacts table (PCT), including the audience key fields, the assigned offers, and the contact date. Additional fields might be required in the PCT, such as channel or cost per offer, which you must populate by mapping to an existing field.

You can use any mapped table field or derived field. Derived fields are useful to pass a constant text string, for example, the channel `Call Center - Midwest`.

1. Click the **Optimize** tab in the Optimize process.

   The **Optimize** tab displays.

2. Click the field that you would like to map to the unmapped field from the **Field name** column.

3. Click **Add**.

   The field name displays in the same row as the unmapped field, in the **Export fields** section.

4. Repeat the first two steps for each field that you would like to map.

5. Click **OK** to save your process configurations.

Related concepts:

"The Optimize process Optimize tab" on page 80

Related reference:

"Optimize process Optimize tab reference"

Optimize process Optimize tab reference

The **Optimize** tab requires the following information.

Table 20. Optimize process Optimize tab reference

Field	Description
Participate in Contact Optimization session	Allows you to select a Contact Optimization session to link to this flowchart. This session receives the proposed contacts that are generated when the flowchart is run.
Candidate fields	**Field name**: Lists the database fields that you can map to the Contact Optimization template table fields. The field that you select from this column provides the data that populates the **Contact Optimization template table** field that you map it to. **Type**: Lists the type of data that is in this database field.
Export fields	**Field name**: Lists the name of the database field that you chose to map to the **Contact Optimization template table** field. The **Contact Optimization template table** field that is mapped to this field displays in the same row, under the **Table field** column. **Table field**: If you select a Contact Optimization template table to append to the PCT when you created your Contact Optimization session, this column lists the fields that make up the Contact Optimization template table. The database field that you mapped to this field displays in the same row, under the **Field name** column.

Table 20. Optimize process Optimize tab reference (continued)

Field	Description
Profile	Allows you to preview a list of distinct values and their frequency of occurrence for a selected field. Only records in the current cell are included in the count, unless the counts are precomputed. For more information about profiling data, see the *IBM Campaign User's Guide*.
Derived fields	Allows you to create a variable for querying, segmentation, sorting, calculations, or output to a table. Derived fields are new variables that do not exist in a data source and are created from one or more existing fields, even across different data sources. For more information about derived fields, see the *IBM Campaign User's Guide*.

Related concepts:

Related tasks:

The Optimize process Score tab

The **Score** tab in the Optimize process allows you to populate the `ScorePerOffer` field in your proposed contacts table (PCT) with different scores for offer and cell combinations.

To have your settings on the **Score** tab of the Optimize process take effect, you must:

* Choose the Scoring Method **Use score field** on the **Scoring** tab of an optimization session.
* Select the **ScorePerOffer** field for the **Score** field.

The **Score** tab of the Optimize process populates only the `ScorePerOffer` field of the PCT.

If you select **Use score field** on the **Scoring** tab of your Contact Optimization session, you must populate some field in the PCT with a score for optimization. One way to populate the field is to complete the **Score** tab of the Optimize process. Other ways might include:

* Using a **Score** field that is created by the SPSS Score process
* Using a predictive model score field that is stored in your marketing database
* Computing a score by using a derived field.

All flowcharts that participate in the same Contact Optimization session must populate the same score field in the PCT field you specify on the Scoring tab of your Contact Optimization session. You can select only one column in your PCT to contain scores.

If you select **Manually enter score matrix** on the **Scoring** tab of your Contact Optimization session, while you must submit scores through the Optimize process, the scores are ignored. The values in the score matrix are used instead.

Related tasks:

"Assigning score fields in the Optimize process"

Related reference:

"Optimize process Score tab reference"

Assigning score fields in the Optimize process

You can assign score fields to cell and offer combinations.

You can assign the same score field or different score fields to each cell and offer combination. For example, if the same offer is given to each of three cells, the score field for all three cell-offer rows might be MyOfferScore. Alternatively, if three different offers are given to the same cell, the score field for each cell-offer row might be different, such as Offer1Score, Offer2Score, and Offer3Score.

1. Click the **Score** tab in the Optimize process.

    The **Score** tab displays. The cell name and offer columns are populated by the content of the Assignment tab.

2. Select the name of the field you want to use for the scores from the **Score field** list for each cell and offer combination.

    To assign the same field to multiple cell-offer rows, you can select multiple cell-offer rows by using **Shift+Click** or **Ctrl+Click**.

3. Click **OK** to save your process configurations.

Related concepts:

"The Optimize process Score tab" on page 82

"Configure a Contact Optimization session to use a score field from the PCT" on page 67

Related reference:

"Optimize process Score tab reference"

Optimize process Score tab reference

The Score tab requires the following information.

Table 21. Optimize process Score tab reference

Field	Description
Cell name	The name of the input cells that are connected to the Optimize process. These input cells are selected on the Assignment tab of the Optimize process.
Offer	The name of the offer that is assigned to the cell. This assignment is defined on the Assignment tab of the Optimize process.
Score field	The name of the field you want to map to the ScorePerOffer field in the PCT. You can use a derived field.
Derived fields	You can use derived fields with score fields. For more information about derived fields, see the *IBM Campaign User's Guide*.

Related concepts:

"The Optimize process Score tab" on page 82

"Configure a Contact Optimization session to use a score field from the PCT" on page 67

Related tasks:

"Assigning score fields in the Optimize process" on page 83

Run the flowchart

After you configure the Optimize process, you can perform a *production* run of the flowchart in Campaign to populate the PCT.

The PCT gives Contact Optimization access to the list of contacts and offers in Campaign.

Note: Test runs of the flowchart or branch that contains an Optimize process do not populate the PCT.

For information about running a Campaign flowchart, see the *IBM Campaign User's Guide*.

Optimize process and flowchart test runs

A test run of a flowchart or branch that contains an Optimize process, or a test run of the Optimize process itself does not alter the PCT, OCT, and POA tables that are created as part of the session. The test run does not affect the records that they contain.

After the test run completes, the tooltip for the Optimize process indicates that the process ran as part of a flowchart test run and that no records were exported during the run.

Note: A test run of an Optimize process is different from a test run of a Contact Optimization session. There is no direct relationship between these test runs.

Perform a test run of a Contact Optimization session

You can tune your Contact Optimization session before a production run by performing a test run.

After you run all the flowcharts that generate contact and offer information that the Contact Optimization session can access, you can run the Contact Optimization session that you created. You should perform a test run of the session to see whether the results of the optimization are what you expect. After you review the results, perform a production run to generate the final set of data.

You can choose the number of customers to be included in a test run by specifying the value for **Test run sample percent** under **Advanced settings** or under **Configuration settings** at `Campaign | partitions | partition[n] | Optimize | TestRun`.

The test sample percentage is the percentage of customers to use from the PCT. Customers for a test run are selected based on the RC table of the respective session. The order of customers can be changed by controlling the **Customer random**

seed under **Advanced settings** or under **Configuration settings** at `Campaign |
partitions | partition[n] | Optimize | AlgorithmTuning`.

The optimized contacts for the test run are written to the OCT. Reports for a test
run are generated the same as for a production run. You can identify the type of
run by looking at the Report Run field of the Analysis tab. Additionally, you can
look at the test run entry in the log file.

Note: The results of a test run and a production run are written to the same OCT
table of the respective Contact Optimization session. If you have a Contact
Optimization session run in either mode, it deletes the results of the previous run
and updates the OCT table with the results of the current run. You cannot have
result of both run types at same time in the OCT table.

Test runs versus production runs

The test run is identical to a production run with the only difference being the
number of customers processed.

In a production run, the entire set of customers is processed. However, for a test
run, the number of customers who are processed would be approximately equal to
that specified by the test run sample percentage. In the test run, customer chunks
are created similar to those created in a production run. By using the value that is
specified for test run sample percentage, the number of customers in the test run
are calculated. These customers are then divided into various chunks by using the
`CustomerSampleSize` parameter. This is similar to what is done in a production run.
If the number of customers for the test run works out to be lesser than those
required to completely fill up a chunk, a ceiling is done for the number of
customers so it completely fills the chunk. The number of customers in a test run
are always a multiple of the chunk size.

The query run part of the test run is similar to that of the production run. The
queries are run on all the tables that are associated with Contact Optimization
session (that is, PCT, RC, CH, and DCH). For each of these tables, the queries are
run on its entire data set. The time that is taken for the run of the queries is similar
in both types of runs. In a test run, running the session stops only after the Contact
Optimization server processes the number of customers that equals the test sample
size percentage.

The rules are also processed similarly to the production run. The CC rule
constraints are distributed across total number of chunks of PCT similar to a
production run. The CC rule constraints are not distributed only across the test run
chunks but across all the chunks that are created from the PCT. In other words, the
calculation of the CC rule constraints distribution across the chunks is done based
on the total number of chunks across PCT. It is not done based on the number of
chunks that are to be processed specifically for the test run; therefore, the
application of the rules is identical to the production run.

It is recommended to keep the same settings for the Contact Optimization tuning
parameters (that is, Algorithm Tuning parameters, Database Tuning parameters,
and so on) for both types of runs to correctly extrapolate results of a test run
against a production run. Due to the complexity of rules and data, the results of a
test run do not have to be the same as a production run.

Note: All the queries run on whole data, so the initial requirements of preparing
the session run is the same as production run. The results can differ between a

production run and a test run in terms of the time that is taken and the overall quality of the results because of the complexities of the associated data.

Performing a test run of your Contact Optimization session

In IBM Contact Optimization, you can perform a test run on a sample of your data so that you can assess the performance of the optimization session quickly.

1. Set the value for **Test run sample percent**.
   - If you are using custom session settings, you can choose the number of customers to be included in a test run by specifying the value for **Test run sample percentage**.
   - If you are not using custom session settings, you can choose the number of customers to be included in a test run by specifying the value in the configuration parameter, which is available at `Affinium|Campaign|partitions|partition1|Optimize|TestRun`.
2. From the Summary tab of the Contact Optimization session you want to run, click **Execute > Test run**.

   IBM Contact Optimization begins optimizing a subset of the proposed contact list. The test run sample percent that you selected defines the subset.
3. Optional: In the post-optimization flowchart in IBM Campaign, you can extract the results of a test run of a Contact Optimization session in the same way you extract the results of a production run.

On the Analysis tab, go to **Report run** field, and the field reflects the results on the Contact Optimization session. The transaction count before and after the test run is available for you to compare. The Analysis tab is visible to the user after the run is complete.

Note: You cannot schedule a test run or use the Acoopadmin tool to perform a test run.

In the post-optimization flowchart, extracting the results of a test run of a Contact Optimization session is the same as extracting the results of a production run. After you click **Optimized lists**, under **Select ICO session**, you can choose the corresponding Contact Optimization session and get the details of the test run. By selecting an optimized list as input from the Extract table, you can view whether the data in the OCT is from a production run or a test run. You can use one Extract process box for extracting the results of a production run of one Contact Optimization session and another Extract process box for extracting the test run results of the other Contact Optimization session as inputs to a mail list. There are three values for the run information in an Extract table: production run, test run, or never run. Never Run is only shown whenever a Contact Optimization session was created, but has not been run.

Perform a production run of the Contact Optimization session

After the campaign managers run all the flowcharts that are configured to generate contact and offer information for a particular Contact Optimization session, you can run that Contact Optimization session.

Performing a production run writes a complete optimized contact list to the OCT, overwriting any previous results. A production run might take quite some time to complete, depending on the following factors:
- The complexity of the session

- The size of the proposed contact list
- The number of campaigns using the session
- The tuning of the system

You can schedule Contact Optimization sessions to run by using the Marketing Platform scheduler. You can use scheduler triggers to have the Contact Optimization session start after all the pre-optimization flowcharts are complete. See the *IBM Marketing Platform Administrator's Guide* for details about using the scheduler.

Performing a production run of a Contact Optimization session

Perform a production run of a Contact Optimization session to optimize your proposed contacts by using your optimization rules.

1. From the **Summary**, **Rules**, **Scoring**, or **Analysis** tab of the Contact Optimization session you want to run, click **Execute** > **Production run**.

   The **Confirm session run: Production run** page displays.

2. Click **Run the session now**.

   The **Run progress** tab displays.

Contact Optimization optimizes the proposed contact list that is based on the rules and scoring in the Contact Optimization session. The optimized contacts table (OCT) populates with the results of the run.

Note: You can continue working in Contact Optimization during a production run of a session. You cannot, however, delete or modify a running session.

You can stop a running session by clicking **Stop the run**. This command does not stop the session instantly. Instead, it stops the session at the next logical step in the optimization algorithm to ensure a clean shutdown with no corruption of data. It might take a few minutes for the process to stop.

Reviewing optimization results

When the Contact Optimization session finishes running, you can review the results of the production run.

Click either of the following options:
- **Go to analysis tab** from the Run progress tab.
- The **Analysis** tab of the Contact Optimization session.

The **Offer filtering summary** report shows by default. The **Offer filtering summary** report shows the number of proposed contacts that are removed by each rule in the Contact Optimization session.

From the **Analysis** tab, you can view additional summary and analysis reports. These reports help you to further profile offers, and determine rule performance, customer distribution, or offer distribution.

Related concepts:

Chapter 8, "Viewing reports," on page 99

Chapter 7. Use optimized contacts in marketing campaigns

After you optimize the proposed contacts, you must retrieve the optimized contacts from IBM Contact Optimization to send marketing communications to these contacts.

You must create a flowchart in IBM Campaign to both retrieve contacts from Contact Optimization and send communications.

This flowchart is called the post-optimization flowchart. The post-optimization flowchart is typically created as part of the campaign you created when you made the flowchart to generate your pre-optimized list of contacts.

This section describes how to create a basic flowchart for retrieving optimized contacts for use in a marketing campaign. It also describes how to perform several optional, more advanced tasks such as handling multiple packages and sampling for hold-out control groups in the post-optimization flowchart.

Related tasks:

"Link the optimized contacts to a contact process" on page 91

"Running the post-optimization flowchart" on page 91

Select optimized contacts

To bring the optimized contacts into Campaign, you must create a flowchart with an Extract process. An Extract process is the only way to retrieve optimized contact transactions back from a Contact Optimization session.

Use the Extract process to perform the following actions:

- Select the package or packages that contain the optimized contacts you want to include in your marketing campaign.
- Further filter the optimized contacts by any Proposed Contact Table (PCT) or Optimized Contact Table (OCT) field you created. For example, you run a weekly campaign that is optimized only monthly. You can retrieve only those optimized transactions that need to be delivered that week by extracting using the ContactDate.
- You cannot substitute the Extract process with another data manipulation process such as the Select or Audience process. The Extract process allows you to retrieve only those optimized transactions that are needed from Contact Optimization that you submitted into the Contact Optimization session. These transactions are typically scoped by campaign, flowchart, and Optimize process, and possibly by other criteria such as channel or date. Another data manipulation process would retrieve by Audience IDs, incorrectly including optimized transactions that have nothing to do with a particular campaign. That is, surviving contact transactions to the same individuals submitted by another campaign.

For general information about configuring the Extract process, see the *IBM Campaign User's Guide*.

Related tasks:

Selecting the package that contains the optimized contacts

Retrieve the results from only a single package at a time using the Extract process.

A single package is all offers that are sent on the same channel at the same time to recipients. You can select more than one package at a time in a single Extract process only if you are certain that the audience IDs targeted within each package are mutually exclusive. That is, each audience ID is treated only in one package or the other, but not both. Otherwise, segmenting by audience ID results in sending duplicate offers to those individuals belonging to multiple packages. If you select more than one package from one Extract process, the Contact Optimization template you are using must include a field for the Optimize process or package. Then, you can include a Segment process in the flowchart to separate each package into its own contact process. It might be easier to use multiple Extract processes, each one extracting optimized transactions for a particular package.

1. Create a batch flowchart in Campaign.

   For more information about creating a flowchart in a campaign, see the *IBM Campaign User's Guide*.

2. Add an Extract process to the flowchart.
3. Double-click the Extract process.

   The **Source** tab displays.
4. From the list in the **Input** field, select **Optimized lists**.

   The **Select Contact Optimization session** window displays.
5. Expand the **All sessions** list, and select the Contact Optimization session from which you want to select optimized contacts.

   The **Select Contact Optimization session** window populates with information about the Contact Optimization session you selected. The **Select results by participants** section lists the various campaigns that participated in this Contact Optimization session. Each row represents a specific Optimize process or package, and the flowcharts to which they belong.

   Note: You can select the last Contact Optimization session that was used by reselecting it from the drop-down menu.
6. From the **Select results by participants** section, select the package from which you want to retrieve optimized contacts.
7. Click **OK**.

   The **Select Contact Optimization session** window closes.
8. On the **Extract** tab, select at least the audience ID field and any other fields that are required for the contact process.

Retrieving optimized contacts by a PCT or OCT field

You can also use the Extract process to filter records by using the **Select records with** option.

This procedure is in addition to the steps described in "Selecting the package that contains the optimized contacts."

1. On the **Source** tab of the Extract process, select **Select records with**.

   The query builder displays.
2. Select a field from the **Available fields** section by double-clicking it.

   The field populates the **Field name** column of the query builder.
3. Select values for the **Operator**, **Value**, and **And/Or** columns in the same way.
4. Repeat the process to filter the optimized contacts by other fields.

Related concepts:

"Create template tables" on page 14

"Contact Optimization template table" on page 7

Link the optimized contacts to a contact process

To send out marketing communications to your final contact list, you must add a contact process to your flowchart. Connect the Extract process to a contact process such as Mail List, Call List, or eMessage.

For information about configuring a contact process, see the *IBM Campaign User's Guide*.

1. Add a contact process (Mail List or Call List) to the flowchart.
2. Connect the Extract process to the contact process.
3. Double-click and configure the contact process as follows.
   a. Confirm that the Offer is **Assigned by Contact Optimization** on the **Treatment** tab.
   b. Configure the **Fulfillment**, **Personalization**, and **Logging** tabs as described in the *IBM Campaign User's Guide*.
   c. You must set the **Contact date** on the **Contact history logging options** dialog box to the same contact date as originally proposed. The contact date must match the **ContactDateTime** field in the Extract process.

      Open the **Contact history logging options** dialog box by clicking **More options** on the **Logging** tab. If you chose a different contact date, you can violate optimization constraints.

      There can be only a single contact date and time for all contacts within this contact process. If there are multiple contact dates in the retrieved optimized contacts, you must segment by ContactDateTime and channel (that is, package) before connecting to a contact process.

Related concepts:

Chapter 7, "Use optimized contacts in marketing campaigns," on page 89

"Select optimized contacts" on page 89

Running the post-optimization flowchart

After you configure the Extract and contact processes, run the flowchart to generate the final contact list for your campaign. You can optionally log to contact history.

For information about running an Campaign flowchart, see the *IBM Campaign User's Guide*.

Related concepts:

(Optional) Define a trigger to start the post-optimization flowchart

You can define a trigger to automatically run the post-optimization flowchart after the Contact Optimization session completes running.

The post-optimization flowchart retrieves these optimized contacts and uses them in your campaign.

A trigger is a text string that the Marketing Platform Scheduler sends when a run completes successfully or when a run fails. If you have a schedule that sends a trigger on completion, you can set another schedule to start a run when it receives that trigger.

For more information about defining triggers in Marketing Platform, see the *IBM Marketing Platform Administrator's Guide*.

Handling multiple packages

If your post-optimization flowchart retrieves optimized contacts from more than one package, you must separate each package into distinct contact processes.

Using separate contact processes places audience IDs into their various groups, for example, High-value and Low-value.

You can handle multiple packages in your flowchart using one of the following methods:

- Selecting more than one package from a single Extract process. This method works only when the audience IDs are guaranteed to be treated only in a single package.
- Including one Extract process per package.

   If the same audience ID can be treated in multiple packages, you must use this approach. Otherwise, the same offers can be sent in duplicate to members of multiple packages. To retrieve results from a few packages, it might be easier to create a separate Extract process per Optimize process. Setting up a segmentation field in the Contact Optimization template table and using the Segment process in the post-optimization flowchart might be more complicated.

Proposed packages must be preserved post-optimization, since the contact fatigue rules might be based on the number of interruptions that are allowed to each individual. Rearranging the surviving offers into different packages, and therefore a different number of interruptions to the recipient, might violate your corporate contact fatigue strategy.

If you select more than one package of optimized contacts when you configure the Extract process, you must include a Segment process in your flowchart. The

Segment process separates the various audience IDs from multiple packages back into individual packages. These individual packages can then be handled individually.

Note: You can retrieve multiple packages in a single Extract process only if you are certain that the audience IDs are mutually exclusive across packages. Otherwise, the audience IDs belonging to multiple packages can receive duplicate offers.

To use the Segment process to divide customer IDs into their original packages, you must include a field in the optimization template table. This field must act as an identifier for the Optimize process from which the package originated.

Including one Extract process per package

This method retrieves optimized contacts from a Contact Optimization session and works regardless of whether audience IDs are mutually exclusive or overlapping. If you are not certain that audience IDs being retrieved together in the Extract process are mutually exclusive, use this approach.

1. In your flowchart, include one Extract process for every package from which you want to retrieve optimized contacts.
2. In each Extract process, select the package from which you want to retrieve optimized contacts.

   Follow instructions in "Selecting the package that contains the optimized contacts" on page 90.
3. Direct each package into its own contact process (for example, the Mail List or Call List process).

   For information about configuring a contact process, see the *IBM Campaign User's Guide*.

Selecting more than one package from a single Extract process

Use this method only if you are sure that the packages are mutually exclusive. This method also requires a custom field in your Contact Optimization template table.

For information about working with flowcharts, see to the *IBM Campaign User's Guide*.

1. Create a batch flowchart in Campaign.

2. Add an Extract process to the flowchart.
3. Follow instructions in "Selecting the package that contains the optimized contacts" on page 90, selecting all packages to be processed in the same post-optimization session.
4. Select the field from which you want to extract optimized contacts.

   Note: You use this same field in the Segment process to segment audience IDs back into their original packages.

   a. From the **Extract** tab of the Extract process, select a field in the **Candidate fields** section.
   b. Click **Add**.

      The field populates the **Fields to extract** section.
5. Click **OK**.

6. Add a Segment process [icon] to the flowchart, and connect the Extract process to the Segment process.

7. Perform a test run of the Extract process.

   The Extract process runs and communicates information to the Segment process.

8. Configure the Segment process.

   a. Select the Extract process from the list in the **Input** field.

   b. Select **Segment by field**.

   c. Select the field by which you want to segment audience IDs back into their original packages from the **Segment by field** list.

      This field is the same field that you selected in step 4.

   d. Select the packages that you want to segment and click **Close**.

   e. Select the **Create extract tables** check box.

   f. Complete the **Extract** tab by selecting the **Target data source** and the fields to include in the Extract table.

9. Direct each package into its own contact process, for example, the Mail List or Call List process.

Related concepts:

Sampling for hold-out control groups

To determine the effectiveness of your offer, you can create a hold-out control group for cells assigned that offer. Hold-out control groups are non-contact groups that would receive the offer, but you chose to deliberately withhold from the target cell. You can then compare the "lift" or difference in response from the target cell that received an offer.

Controls are applied at the cell level. You can assign offers to cells in a contact process in a flowchart or from a target cell spreadsheet. When you assign offers to cells, you can specify one or more cells that act as a control cell for each target cell.

For details about specifying a cell as a control for another cell or cells, see the *IBM Campaign User's Guide*.

Creating a hold-out control group requires you to include a Sample process in your flowchart.

This section describes two ways in which you can sample for hold-out control groups:

• Sample at the audience ID level.

  This approach is consistent with how control cells are used in Campaign. In this case, control cells are at the audience ID level rather than at the offer-audience ID level. The following limitations apply:

  – Members of the control cell do not receive any offers. The offers for a contact that is part of a control cell are suppressed for any offers being processed within the specific flowchart. Across multiple flowcharts, the same contact is

not always chosen to be in the control cell. Therefore, a particular contact might still receive offers from other flowcharts.

Note: This sampling method is not the same as a universal hold-out control group that is withheld from all company communications. If you use a universal hold-out control group, you must identify members of your surviving contacts in that group and remove them. For example, by matching against a universal control strategic segment and then excluding those audience IDs. For more information about control groups, see the *IBM Campaign User's Guide*.

– Sampling at the customer ID level does not guarantee equal representation across all offers. For example, you choose that 10% of all customer IDs be treated within a flowchart with multiple offers. It is possible that no one in the control cell is targeted to receive offer X. When analyzing offer X, in this case, the control cell is empty.

• Sample at the offer level.

Another way to randomly sample for hold-out control groups is to sample on a per-offer basis, rather than on a cell basis. Although sampling on a per-offer basis takes more work to configure, this option guarantees that a particular percentage of a specific offer is being held out for measurement purposes. At the cell level, an offer that is infrequently given out might not have any representation in the control cell. You might prefer this approach when the distribution of your offers is skewed.

When randomly sampling at the cell level, you must sample from groups that are statistically similar. For example, if you initially segment into high-value, medium-value, and low-value segments, you must re-create those segments before sampling for control groups. You must compare high-value customers not receiving any offers against high-value customers receiving offers, and medium-value customers to medium-value customers. Do not randomly sample across all customers, regardless of their value, and compare them against your initial segments.

Before sampling, then, you must re-create the appropriate segments. Re-creating segments is not necessary if you created different randomly selected cells from the same population, purely for testing purposes (for example, for assigning different offers).

Sampling at the audience ID level

Create hold-out groups to analyze the lift of your optimizations.

This procedure assumes that each cell you initially create is sampled separately.

1. Perform one of the following steps:
   • In the Extract process in your flowchart, retrieve optimized contacts from the **CellCode** field, following instructions in "Retrieving optimized contacts by a PCT or OCT field" on page 90.
   • Add a Segment process to the flowchart and segment by the **CellCode** field, instead of extracting from the **CellCode** field in the Extract process.
2. Randomly sample each cell into a target cell and a control cell.
   a. Add a Sample process to the flowchart.
   b. Connect the Extract process to the Sample process.
   c. Configure the Sample process by using **Random sample** to create a target cell and control cell.

See the *IBM Campaign User's Guide* for additional instructions on configuring the Sample process.

3. Connect all of the target and control cells that belong to a single package into a single contact process.

   For more information about channeling multiple cells into separate contact processes, see "Including one Extract process per package" on page 93.

Sampling at the offer level

Sampling at the offer level is possible if you map the optimized contacts table (OCT) or use a template table to export the offer codes. Then, extract the data from the table post optimization, and perform segmentation that is based on the offer codes that remain. Use this method to sample if your offer distribution is skewed.

For more information about working with flowcharts and processes, see the *IBM Campaign User's Guide*.

1. In your post-optimization flowchart, configure your Extract process.

   a. Retrieve optimized contacts according to package and offer code. For example, package A contains offers 1, 2, 3 and package B contains offers 1 and 4. You need five Extract processes, one each for optimized transactions: A1, A2, A3, B1, and B4.

   b. (Optional) If you must segment by cell for statistically valid hold-out control groups, retrieve optimized contacts from the **CellCode** field.

2. (Required only if you performed step 1b.) To resegment back into the original cells to create statistically relevant control groups, add a Segment process to the flowchart and segment by the **CellCode** field. This method is how you put customer IDs back into their initial groups, for example, High-value and Low-value.

3. Randomly sample each cell into a target cell and a control cell by using the **Random sample** option in the Sample process.

4. Connect all of the target and control cells that belong to a single package into a single contact process.

   For more information about channeling multiple cells in to separate contact processes, see "Including one Extract process per package" on page 93.

Assign final cell codes

You must assign cell codes in either your pre-optimization or post-optimization flowchart.

You can assign cell codes when configuring the Optimize process in the pre-optimization flowchart. Otherwise, you must segment the cells back into their original cells, and then assign cell codes in the post-optimization flowchart.

The cell codes that are generated from the pre-optimization flowchart are available to you in the PCT and OCT. These cell codes can be included your contact list as an IBM Campaign Generated Field (ICFG). If the cell codes are needed only by your fulfillment vendor, this method might be sufficient. However, if you need the cell codes for analysis and reporting purposes, consider the following methods:

- Use the CellCode field in the PCT and OCT, and include the field in the ContactHistory table as an additionally tracked field.

  Use a contact processes such as Mail List to include a field from the PCT to an additionally tracked field. For more information about additionally tracked

fields, see the *IBM Campaign User's Guide*. You can then customize your Campaign reports to use the field from contact history for grouping by cell.

Note: This method is an expensive way to store cell codes. Since you must repeat this procedure, the cell code is stored once per contact in the Contact history system table.

- Resegment by the cell codes in the OCT and PCT and then assign your final cell codes in the Segment process. This method allows you to use all the standard reporting by cell reports that are provided with Campaign.

Target control spreadsheet and post-optimization flowcharts

You can use the TCS to manage the cell codes for your optimized contacts.

If you link cells created in your flowchart to cells defined top-down in the TCS in your pre-optimization flowchart, you cannot link to the same cells in your post-optimization flowchart. You can link to new cells in one of two ways:

- Bottom-up-Connect the Extract process to a process that generates bottom-up target cells in the TCS.
- Top-down-Copy the TCS rows and link them in a process in your post-optimization flowchart.

For more information about using the TCS, see the *IBM Campaign User's Guide*.

If you are using the TCS in a IBM Marketing Operations campaign project, the TCS must contain a row entry for each cell input into the contact process, such as the Mail List process. Each cell in the flowchart must be linked to a TCS and all linked rows must be approved before running the post-optimization flowchart in production.

- If you are using a single Extract process box (extracting optimized contacts for campaign X) connected to a contact process, you must create a top-down cell link from the TCS to run the flowchart in production.
- If you segment the extracted cell or use a Sample process to create hold-out control cells, then each of the input cells into contact processes must be linked from top-down cells. If you resegment these cells into the same segments and offers as when you submitted the proposed contacts, you can copy the TCS rows that are used in the proposed contacts flowchart. You can then associate them to the corresponding cells in the post-optimization flowchart. Each cell can have a different cell name and code.
- For the TCS rows linked to cells in the post-processing flowchart using optimized offers from Contact Optimization, no offers need to be assigned. Any assigned offers are ignored.

For more information about using the TCS with a Marketing Operations campaign project and a post-optimization flowchart, see the *IBM Marketing Operations and Campaign Integration Guide*.

Assigning final cell codes

You must assign cell codes in your post-optimization flowchart if you do not assign them in the pre-optimization flowchart or the target control spreadsheet.

For more information about assigning cell codes, see the *IBM Campaign User's Guide*.

1. In the Extract process in your flowchart, retrieve optimized contacts by the **CellCode** field. Follow the instructions in "Selecting the package that contains the optimized contacts" on page 90.
2. Add a Segment process to the flowchart and connect the Extract process with the Segment process.
3. Perform a test run of the Extract process.

   The Extract process runs and communicates information to the Segment process.
4. Configure the Segment process.
   a. From the list in the **Input** field, select the Extract process.
   b. Select **Segment by field**, and in the list, select the **CellCode** field (the field by which you want to segment customer IDs back into their original packages).

      Note: Do not check the **Mutually exclusive segments** option.
   c. Select the packages that you want to segment and click **Close**.
   d. Assign final cell codes to each cell on the **General** tab.
5. Connect the cells into different contact processes.

Chapter 8. Viewing reports

For each production run or test run, IBM Contact Optimization generates a number of reports. These reports help you understand what happened during the optimization process by providing analyses pre- and post-optimization.

The included reports highlight rule performance, the migration of customers from one campaign or offer to another, and analysis across customers, channels, and offers.

Reviewing the rules and the optimization results proposed for each Contact Optimization session is an iterative process. Contact Optimization reports provide insight into this process. Reviewing the reports can provide information to help you refine rules to address your corporate or each campaign manager's goals or to explain the optimization process to participating campaigns.

Each production run or test run of a Contact Optimization session automatically generates reports. You can view the most recent set of reports for the current Contact Optimization session run, or you can access reports from previous runs (for example, for comparison purposes). The **Report run** list on the **Analysis** tab allows you to choose the specific Contact Optimization session run you want to view. Contact Optimization runs are listed in reverse chronological order with date and time, the person that ran the session, and the run status.

All Contact Optimization reports are available on the **Analysis** tab of a Contact Optimization session. If the Contact Optimization session has not yet been run, the reports display, `Report data does not exist.`

Related tasks:

"Reviewing optimization results" on page 87

Viewing reports

You can view the Contact Optimization reports from the **Analysis** tab of a Contact Optimization session.

This section provides basic information about working with reports in Contact Optimization. A set of Contact Optimization reports is generated each time the Contact Optimization session is run. You can choose which set of reports to view based on the run date.

1. Click the **Analysis** tab in a Contact Optimization session.

   The **Analysis** tab opens.
2. Select the Contact Optimization session you want to view reports for from the **Report run** list.
3. Select the report that you want to view from the **Report type** list.

   The report displays.

Clearing run history

You can clear disk space by periodically removing all the production run or test run data for a Contact Optimization session.

Contact Optimization keeps all the data from every production run or test run of a Contact Optimization session on the server that hosts the Contact Optimization server. Clearing the run history also clears the `UACO_SesnRunHist` table.

Note: When you clear the run history, you delete all statistics that are kept for reporting purposes. All Contact Optimization reports for this Contact Optimization session state `Report data does not exist.`

1. Open the Contact Optimization session from which you want to delete the run history.

   A confirmation dialog box displays.

2. Click **Execute** > **Clear run history**.

3. Click **OK** to delete the run history.

Contact Optimization deletes all the run history. This action includes all data for the Contact Optimization session **Analysis** tab.

Offer Filtering Summary report

The Offer Filtering Summary report shows the number of proposed contacts (and associated percentages) removed by each rule in the Contact Optimization session.

Note: The count for all Include/Exclude rules are reported as a single entry in this report. The breakout of individual exclusion rules is not supported.

If the number of surviving contacts in the optimized contact list is too high or too low, you can use this report to understand the impact of each rule. You can then modify the rules to be more or less restrictive.

Note: Although rules are shown in the same order as they are on the Rules tab, rules are not applied serially during the optimization process. The order in which Contact Optimization applies the rules has no net effect on the optimization results.

Contact Optimization generally credits rules in the following order:

1. Unprocessable customers

   After clicking **Unprocessable** on the **Analysis** tab of the session, you are taken to the Rules Listing page. The **Unprocessable customers** section of the **Offer Filtering Summary report** page shows a graph of customers that cannot be processed by the Contact Optimization algorithms. This condition might be caused by

   - rule and constraint conflicts, such as a chunk not having enough number of offers for satisfying a Capacity rule.
   - the algorithm not evaluating a sufficient number of alternatives for those customers.
   - the `The generation loop was unable to eliminate all slack and surplus variables` error.

     You can use ContinueOnGenerationLoopError to continue a Contact Optimization session if you receive the previous error.

For more information about unprocessable customers, see the *IBM Contact Optimization Troubleshooting and Tuning Guide* for more details.

2. Exclude/Include rules
3. Capacity rules

   Note: Credit that is given to Capacity rules might be only approximate. First, if multiple Capacity rules can be responsible for excluding an offer, each rule is given a percentage of the credit. For example, if an offer can be excluded by three different Capacity rules, each rule is given 33% credit. Second, if a contact is excluded by both a Capacity rule and a For Each Customer rule, the For Each Customer rule might get credit.

4. For Each Customer rules

Within a rule type, the Offer Filtering Summary report credits the rules in the order they are listed in on the **Rules** tab of the optimization session.

The report is organized as follows:

Table 22. Offer Filtering Summary report

Element	Description
Offer count (before optimization)	The total number of proposed contacts.
Rule name	The name of the rule. "Exclude/Include" represents all Exclude/Include rules.
Removed by this rule	Number of proposed contacts that are removed by the rule. The percent of contacts that are removed by the rule is shown in parentheses.
Remaining after this rule	Number of proposed contacts remaining after the rule ran. The percent of contacts remaining is shown in parentheses.
Total removed	Total number of proposed contacts that are removed by the optimization. The percent of total contacts that are removed by the rule is shown in parentheses,
Total remaining (after optimization)	Total number of contacts remaining after the optimization ran. The percent of remaining contacts is shown in parentheses.

Related concepts:

"Min/Max # Offers Capacity rule" on page 39

"Optimization Rule Exceptions" on page 59

Related tasks:

"Adding a Rule Exception to a Min/Max # Offers capacity rule" on page 60

Customer Redistribution by Campaign report

You can analyze how different campaigns overlap in targeting recipients common to multiple campaigns. The report also shows how campaigns can cannibalize customers from other campaigns that are based on the optimization rules.

The Customer Redistribution by Campaign report shows how targeted customers from one campaign can overlap with customers targeted from another campaign before optimization and customer migration post optimization. Customer

Migration is an analysis of the number of customers that are commonly targeted between two or more campaigns that are lost from one to another.

This report contains two tables and a three-dimensional bar chart.

Table 23. Before Optimization table

Column	Description
Campaign name	The name of the campaign participating in this Contact Optimization session.
Original customer count	The number of unique customers that are targeted by a campaign after removal of opt-outs, that is, after the removal of customers by Exclude/Include rules.
# Shared	The total number of unique customers that are shared with any other campaign. This number is the number of unique customers that are also being targeted by any other campaign in the same Contact Optimization session.
Customers shared with	The number of unique customers commonly targeted (shared) by each campaign.
Not shared	The number of customers unique to the campaign. That is, the number of customers that are not targeted by any other campaign participating in the same Contact Optimization session.

Table 24. After Optimization table

Column	Description
Campaign name	The name of the campaign participating in this Contact Optimization session.
Optimized customer count	The number of unique surviving customers that are targeted by the campaign after optimization.
# Lost	The total number of unique customers that are removed from this campaign by the Contact Optimization session.
Customers lost to	The number of unique customers lost to other campaigns participating in the Contact Optimization session. That is, the number of customers not allowed a contact from this campaign, yet allowed contact from another campaign.
Not shared	The number of customers in this campaign and not contacted in any other participating campaign.

The bar chart shows the After Optimization data graphically.

Offers by Type and Segment report

This report helps you understand the distribution of offers to strategic segments.

The Offers by Type and Segment report shows the number of customers in each segment receiving any of the offers before and after running the Contact Optimization session. Offers and strategic segments are defined in Campaign.

Note: Contact Optimization controls the offers and customer segments that are shown in this report. Only the specified offers and strategic segments are in this report; Offers are listed down the page and segments across the top of the report.

For information about selecting the offers and segments to include in the report, see "Selecting offers and strategic segments" on page 71.

Any offers that are used in any rules within this Contact Optimization session are automatically included in this report, even if they are not selected for display.

The following options are available as links under the After Optimization table:
- **Show cost summaries**. Use this option to show the sum of the costs of all the proposed contacts of an offer to a customer segment. These values are available only if the **Cost per offer** field in the proposed contacts table (PCT) was populated by participating campaigns.
- **Show score summaries**. Use this option to show the sum of the scores of all the proposed contacts of an offer to a segment of a customer in the Before Optimization table. It also shows the sum of scores for optimized contacts in the After Optimization table. The value in the score field depends on how you configured scores for this Contact Optimization session. It is either the value of the field that is specified in the Scoring tab or it is the values in the score matrix.

You can enable one or both of these options independently. You can remove the sums from the report by clicking the **Hide cost summaries** or **Hide score summaries** links. The information in this report is contained in two tables and two bar charts.

The Before Optimization and After Optimization tables show the following information for each segment:

Table 25. Offers by Type and Segment Report

Element	Description
Offer name	The names of each offer. The first row represents all offers.
Segment	Each column represents a strategic segment. The first column represents all customers.
Count	These columns show the number of contacts for the strategic segments and offers across all the participating campaigns in this Contact Optimization session. In the Before Optimization table, this number is the number of contacts after removal of opt-outs, that is, after Exclude/Include rules are applied.

The first bar chart shows the Before Optimization data graphically. The second bar chart shows the After Optimization data graphically.

Selecting offers and strategic segments

You can limit and reorder the offers and strategic segments available in the score matrix and the Offers by Type and Segment report.

1. Navigate to the **Summary** tab of your Contact Optimization session.
2. Click either of these options:
   - **Displayed offers**
   - **Displayed segments**

   The **Displayed offers** or **Displayed segments** section expands.
3. Click either of these options:
   - **Edit displayed offers**
   - **Edit displayed segments**

The **Displayed offers** or **Displayed segments** page displays.

4. Select the offers or strategic segments that you want to include.

   You can select multiple offers or segments by using **Shift+Click** or **Ctrl+Click**.

5. Click the right-pointing double arrows to move the offers or strategic segments to the **Included offers** or **Included segments** section.

6. To change the order of the offers or strategic segments, select the items that you want to move and use the upward-pointing or downward-pointing arrows.

7. Click **Save**.

   The **Summary** tab displays.

Campaign Optimization Summary report

The Campaign Optimization Summary report shows the number of packages, transactions, offer presentations, unique offers, individual contact dates, and unique contact channels for each strategic segment.

This report can optionally show the percent change in these values before and after running the Contact Optimization session. The **Show percentages** link at the bottom the rule below the After Optimization table controls this display.

The Before Optimization and After Optimization tables show the following information:

Table 26. Campaign Optimization Summary report

Element	Description
Optimize process name	The process name for each Optimize process participating in this Contact Optimization session.
# Packages sent	The total number of packages that are sent to audience members of the specified campaign. A package is all offers given to the same audience entity in a single Optimize process. For example, a target cell of 500 high-value customers is treated in Optimize1 and 1000 medium-value customers are treated in Optimize2. The total number of packages that are sent by this campaign is 500+1000=1500, regardless of the number of individual offers within each package.
# Offer presentations	The number of separate offers that are given to audience members of the specified campaign. For example, a target cell of 100 high-value customers each received two offers in a single mailing. The number of offers that are presented is 2*100=200.
# Unique offers given	The number of different offers that are used in the specified campaign. For example, high-value customers are given offers A and B and low-value customers are given offers B and C. The number of unique offers that are given out by this campaign is 3 (A, B, and C).

Table 26. Campaign Optimization Summary report (continued)

Element	Description
# Unique contact dates	The number of different contact dates given to anyone in the specified campaign. For example, Optimize1 sends a letter on 1/1/07 and Optimize2 sends a package on 2/1/07. The total number of unique contacts is two.
# Unique contact channels	The number of different contact channels that are used for communication with anyone in the specified campaign. For example, offer A has a channel of `Direct Mail` and offer B has a channel of `Email`. Both are given out in the specified campaign. The number of unique channels is two (direct mail and email). **Note:** This number is computed based on the channel attribute of an offer.

Channel Utilization Over Time report

The Channel Utilization Over Time report displays the number of contacts for each channel over the total period of contact dates for all campaigns participating in this Contact Optimization session.

Note: All values for the channel offer attribute are rows in this report, regardless of whether that channel is used by any of the proposed offers in participating campaigns.

The report includes the following information:

Table 27. Channel Utilization Over Time report

Element	Description
Channel name	The name of the channel (or **All channels**).
Original # offers	The number of offers given out on the specified channel across all campaigns after removal of opt-outs (that is, after running the Exclude/Include rules).
Optimized # offers	The number of offers given out on the specified channel across all campaigns after the Contact Optimization session was run.
Dates	The number of contacts on the specified communication channel that occurred over the specified time period. This column displays in increments of a day, week, month, or quarter according to the range of dates that are represented in the optimization period.

Each column displays in date increments as follows:

- A day, if the optimization period is two weeks or less. For example, if the optimization period is 8 days, beginning on 4/1/07, you have 8 columns with headers 4/1/07, 4/2/07, 4/3/07.
- A week if the optimization period is more than two weeks. For example, if the optimization period is three weeks, beginning on 4/1/07, you have 3 columns with headers 4/1/07-4/7/07, 4/8/07-4/14/07, and 4/15/07-4/21/07.

- A month if the optimization period is more than three months. For example, if the optimization period is four months, beginning on 4/1/07, you have 4 columns with headers 4/1/07-4/30/07, 5/1/07-5/30/07, 5/31/07-6/29/07, and 6/30/07-7/28/07.

  Note: A month is defined as a 30-day period. If, for example, a certain month consists of 31 days, such as 5/07, the column header would reflect the 30-day period rather than the entire month. For example, 5/1/07-5/30/07, rather than 5/1/07-5/31/07.

- A quarter if the optimization period is more than eight months. For example, if the optimization period is nine months, beginning on 4/1/07, you have 3 columns with headers 4/1/07-6/29/07, 6/30/07-9/28/07, 9/29/07-12/28/07.

  Note: A quarter is defined as a 90-day period. If, for example, certain months in a quarter consist of 31 days, the column header would reflect a 90-day period rather than the entire three months that make up the quarter. For example, 4/01/07-6/29/-07, rather than 4/1/07-6/30/07.

A three-dimension bar chart below the table shows the channel over time data graphically.

Customer Interaction Volume Report

The Customer Interaction Volume report shows the minimum, maximum, and mean (average) number of contacts by strategic segment after optimization.

This report provides insight into the range of the number of different communications (packages or interruptions) you make to each strategic segment.

The report contains the following information:

Table 28. Customer Interaction Volume report

Element	Description
Segment name	The name of the segment (or **All segments**).
Mean # of packages	The average number of packages that are sent to each member of the specified strategic segment. The value is computed by dividing the total number of contacts that are made in the segment by the number of members in the segment.
Min	The minimum number of packages per customer of the specified segment.
Max	The maximum number of packages that are sent to any member of the specified segment.

Capacity Rule Sensitivity report

The Capacity Rule Sensitivity report lists all of your capacity rules (that is, Min/Max # Offers Capacity rules and Custom Capacity rules) and their associated sensitivity.

The sensitivity value is the marginal benefit for adding a unit of resource. That is, the change in overall score you expect by increasing the constrained resource by one unit. The unit of resource is defined for each capacity rule you create and can be different for each. For example, you have the following Custom Capacity rule:

"The Sum of the CostPerOffer should be <= the value $100,000 for transactions from the offer/offer list Any Offer from channel Any Channel." If the sensitivity is 67, increasing the budget value by one from $100,000 to $100,001 would increase the overall sum of optimized scores by 67. The meaning of the score is whatever you set it to represent, for example, dollars of profit, dollars of revenue, or response probability. Similarly, if you create a Min/Max # Offers Capacity rule, the sensitivity represents the additional score value that is obtained by increasing the maximum number of offers available by one.

If you create a Min/Max # Offers Capacity rule with a minimum, the sensitivity might be negative. The sensitivity is still determined by increasing the minimum by one, that is, from 100 to 101. Since increasing a minimum constrains the problem even more, increasing the minimum most likely changes the score in a negative way.

You can use this report to analyze the cost of implementing capacity constraints. In an ideal world, there would be no minimum or maximum capacity constraint and your business would use the optimization results. You could then adapt inventory and other resources to maximize the score. The sensitivity value tells you the cost (the amount of score that is lost) by maintaining the maximum capacity rule at its current threshold. Using the example of the budget rule, say that the sensitivity value was 1,000 where the score represents profitability in dollars. This sensitivity value means that spending one additional dollar might return an additional $1,000 of profit. A high sensitivity value suggests you consider removing or relaxing a maximum capacity constraint. Similarly, a low sensitivity value indicates that there is low opportunity loss. For example, if the sensitivity value is $0.25, spending an additional dollar to gain 25 cents of profit is likely tolerable.

Contact Optimization list portlets

The standard Contact Optimization portlets that are available for use on dashboards.

These portlets are available for use in the IBM Marketing Software dashboard only.

Table 29. Contact Optimization list portlets

Report	Description
My recent Contact Optimization sessions	A list of the last 10 Contact Optimization sessions run by the user viewing the report within the last 30 days.
My recently successful Contact Optimization run instances	A list of the last 10 Contact Optimization sessions run by the user viewing the report that completed successfully within the last 30 days.
My recently failed Contact Optimization run instances	A list of the last 10 Contact Optimization sessions run by the user viewing the report that did not complete successfully within the last 30 days.

Chapter 9. Administering Contact Optimization

There are many aspects of IBM Contact Optimization you can configure to improve performance.

This section describes many of the optional configuration steps you can take to enhance your Contact Optimization installation.

The Contact Optimization utility

The Contact Optimization utility allows you to load, run, and monitor a Contact Optimization session by using a command-line utility.

You can set up unattended run of Contact Optimization sessions by using generic scheduling tools. Generic scheduling tools are not provided with Marketing Platform, such as cron or the Microsoft Windows Task Scheduler. You can run the Contact Optimization utility on any supported platform.

Prerequisites for the Contact Optimization utility

There are some requirements to complete before using the Contact Optimization utility.
* The Campaign web application and Marketing Platform must be running.
* The Contact Optimization server must have access to the HTTP(S) port of the Campaign web application.
* Java™ must be installed on the Contact Optimization server.
* The `OPTIMIZE_HOME` environment variable must be defined on the Contact Optimization server and point to your Contact Optimization installation directory.
* The `JAVA_HOME` environment variable must be defined on the Contact Optimization server and point to where Java is installed.

Contact Optimization command-line utility

Also known as the ACOOptAdmin utility, you can use this utility to run Contact Optimization sessions from the command line.

Open a command prompt and go to the `/tools/bin directory` of the directory where you installed Contact Optimization.

ACOOptAdmin -sn *session* -u [*password*] [-async] [-locale *localecode*] [-stop]

The ACOOptAdmin utility has the following parameters:
* -sn *session*: Specifies the Contact Optimization session name. This parameter is required. For example, to specify a session that is called `HolidayFundRaiser`, you would enter:

  `ACOOptAdmin -sn HolidayFundRaiser`

  If the session is in a folder, include the folder names separated by forward slashes (/) or backward slashes (\). For example:

  `ACOOptAdmin -sn MktFolder/HolidayFundRaiser`

To allow spaces in your text, place double quotation marks around the session name. For example:

```
ACOOptAdmin -sn "Holiday Mailing"
```

- **-u** *username*: Specifies the user name that is used to log on to Contact Optimization. This parameter is required.
- **-p** *password*: Specifies a password for the user name. This parameter can be omitted if the password is blank.
- **-async**: Runs the Contact Optimization session asynchronously, returning immediately. This parameter is an optional. The default is to run the Contact Optimization utility synchronously, which returns when the Contact Optimization session finishes running.
- **-locale** *localecode*: Specifies the language in which to print the messages that are generated by the Contact Optimization utility. This parameter is optional. The default is en_US.
- **-stop**: Stops a running optimization session.

  This command does not stop the session instantly. Instead, it stops the session at the next logical step in the optimization algorithm. This method ensures a clean shutdown with no corruption of data. It can take a few minutes for the process to stop.

You can specify these parameters in any order on the command line.

Contact Optimization listener

You can start and stop the Contact Optimization listener from the command line.

Open a command prompt and go to the `/bin` directory of the directory where you installed Contact Optimization.

```
ACOServer -start|stop
```

Use `ACOServer.bat` on Windows systems and `ACOServer.sh` on UNIX systems.

The `ACOServer` utility has the following parameters:
- **-start** Start the Contact Optimization listener.
- **-stop** Stop the Contact Optimization listener.

There are several configuration changes that you might need to make to `ACOServer` in order for it to run properly. See the *IBM Contact Optimization Installation Guide* for details.

Configuring Contact Optimization for a multi-locale environment

The multi-locale feature requires some specific settings in your databases.

Contact Optimization supports multiple languages and locales for a single installation. For more information about the multi-locale feature, see the *IBM Campaign Installation Guide*.

- If you are using an Oracle database: When configuring your Contact Optimization server settings, add the following to the Contact Optimization server file:

  ```
  set NLS_LANG=AMERICAN_AMERICA.UTF8
  ```

- When configuring your database tables, run one of the following scripts from the `Campaign/ddl/unicode` directory to create system tables:

- – `aco_systab_sqsvr.sql` for Microsoft SQL Server databases
- – `aco_systab_db2.sql` for IBM DB2® Server databases
- – `aco_systab_ora.sql` for Oracle databases

Configure database load utility

A large component of a Contact Optimization session is reading data from the PCT and writing data to the OCT. Configuring a database load utility improves the performance of your Contact Optimization sessions.

Contact Optimization uses the same configuration settings as Campaign for implementing a database load utility. If you configure Campaign to work with a database load utility, you configure Contact Optimization to use the same commands. Similarly, if you configure Contact Optimization to work with a database load utility, you are configuring Campaign to work with a database load utility. Each assumes a different root directory in your IBM Marketing Software installation directory. The root directory is `/Campaign` for Campaign or `/ContactOptimization` for Contact Optimization, so you can specify different commands in the loader command and template files.

A database load utility also improves performance when populating PCT tables with an Campaign flowchart.

When you configure a database load utility to work with Contact Optimization, it behaves as described for the following Contact Optimization tables:
- PCT table. If the number of unique customers is greater than or equal to the `MinReqForLoaderCommand` or `MinReqForLoaderCommandForAppend`, Contact Optimization uses the database load utility.
- POA table. Contact Optimization uses the database load utility irrespective of the values for `MinReqForLoaderCommand` or `MinReqForLoaderCommandForAppend`.
- OCT table. Contact Optimization uses the database load utility irrespective of the values for `MinReqForLoaderCommand` or `MinReqForLoaderCommandForAppend`.
- RC table. Contact Optimization uses the database load utility irrespective of the values for `MinReqForLoaderCommand` or `MinReqForLoaderCommandForAppend`.

To configure a database load utility for Contact Optimization, complete the following steps.
- Complete the database load utility configuration in the Campaign partitions as described in the Campaign documentation.
- Confirm that the Contact Optimization installation has the database load utility command in the same location as Campaign.

Note: Contact Optimization does not update any user database data sources, so the following information does not apply to user database data sources.

Contact Optimization uses the UA_SYSTEM_TABLES data source loader settings to update Contact Optimization tables during session runs. Because these settings are common to Campaign and Contact Optimization, you must configure the loader as follows:
- – Contact Optimization loader settings: Avoid using relative paths for loader scripts in the UA_SYSTEM_TABLES data source loader configuration. Instead, use absolute paths.
- – If Campaign and Contact Optimization are installed on different machines, create identical folder structures as the absolute path on the Campaign

machine and the Contact Optimization machine. Make sure that the absolute path is accessible to both the Campaign listener and the Contact Optimization listener from their respective machines.

– If Campaign and Contact Optimization are installed on the same machine, you do not have to create the folder structure because it exists.

In the following example, Campaign and Contact Optimization are installed on separate machines, and Campaign has the following loader configuration:

LoaderCommand: /Unica/Campaign/partitions/partition1/db2load.sh <CONTROLFILE> <DATAFILE>
LoaderCommandForAppend: /Unica/Campaign/partitions/partition1/db2load.sh <CONTROLFILE> <DATAFILE>

In the previous example, you create the `/Unica/Campaign/partitions/partition1/` directory on the Contact Optimization machine, and copy all of the necessary loader-specific script files to that directory on the Contact Optimization machine.

Note: When you make changes to the loader script files in the Campaign machine folder, similar changes must be updated to the loader script files on the Contact Optimization machine folder.

• Confirm that the Contact Optimization installation has the control file template for the database load utility in the same location as Campaign.

Increase virtual memory allocation for a process (UNIX only)

If you are processing large amounts of data or are using multi-threaded optimization, you might need to allow Contact Optimization to use more virtual memory.

You configure the virtual memory allocation by setting `ulimit` in `/bin/ACOServer.sh`. Contact Optimization sets the `ulimit` to 1 Gb (1048576) by default.

If the Contact Optimization server is running on a dedicated server, set `ulimit` to `unlimited`. Otherwise, set `ulimit` as high as practicable.

To change the value of `ulimit`, edit the following line of text in `ACOServer.sh`.
`iDataMin=1048576`

Replace the 1048576 with a valid amount of virtual memory. For more information about `ulimit`, including valid values, see the documentation for your operating system.

On Windows systems, there is no `ulimit` equivalent. The effective value is `unlimited`.

Tuning the optimization algorithm

There are some settings that you can configure to change the behavior of the optimization algorithm. You can change these settings to improve optimality or to improve performance.

You can either set these parameters globally or per Contact Optimization session. The global settings are configuration parameters available on the Configurations page in the `Campaign | partitions | partition[n] | Optimize | AlgorithmTuning` category. The Contact Optimization session-level parameters are available as Advanced Settings on the Contact Optimization session Summary tab.

Fine-tuning these sessions is an iterative process. The tuning process depends on your particular environment, including hardware type and configuration, your data set, and your optimization rules. The following sections provide guidelines to follow when you tune your Contact Optimization performance.

Multi-threaded optimization

You can enable multi-threaded optimization to improve the performance of Contact Optimization, that is, shorten the amount of time it takes to run a Contact Optimization session.

To enable multi-threaded optimization, set the `EnableMultithreading` configuration property to `true`.

Note: If you have multiple processors or cores, the number of processors or cores, therefore the maximum number of threads you can use, might be restricted by your Contact Optimization license. Contact your IBM representative for more details.

Enabling multi-threaded optimization might significantly improve Contact Optimization performance. The amount of performance improvement depends on many factors, including:

*   The type of optimization rules you use
*   The interaction of those rules with your data
*   The speed of your database I/O
*   Your type and configuration of hardware

Keep in mind the build chunk time, and avoid using multi-threading with high volumes. If the build chunk time is larger than the chunk process time, multi-threading of the chunk processing stage might not be effective. RAM size, **CustomerSampleSize**, contact (CH/DCH) history table size, and number of rules are just a few factors that can affect performance.

The maximum degree of parallelism achievable is governed by the non-parallel portions of processing and differs from Contact Optimization session to Contact Optimization session.

In general, use the following guidelines.

*   Enabling multi-threaded optimization can improve the performance of the optimization stage only.

    A significant portion of an optimization session run includes the following steps:

    1. Reading data from the proposed contacts table (PCT).
    2. Representing the optimization rules.
    3. Preparing and retrieving data from the database.
    4. Randomizing and creating chunks.
    5. Writing to the optimized contacts table (OCT).

    Multi-threaded optimization does not affect these processes, which run serially. To improve the performance of reading the PCT and writing the OCT, consider using a database load utility and optimizing your database configuration.
*   If you do not use cross-customer rules in your Contact Optimization sessions, multi-threaded optimization has limited improvement.

    Contact Optimization uses multi-threaded optimization most when processing the algorithms that implement cross-customer rules.

- In general, the maximum number of threads available should be equal to or higher than the highest achievable degree of parallelism to maximize performance. However, you might find that other hardware limitations reduce the performance leverage of multiple threads. For example, if insufficient RAM is available to support the number of threads in use, the optimization session might not be able to run. If your hardware has multiple cores (instead of processors), and multiple hardware threads use the same cache, your performance might be limited by the cache I/O.

  You define the number of threads processing the cross-customer rules with the `MaxCustomerSampleProcessingThreads` configuration property. You might need to tune your system to find the optimal value of this setting that is based on your available RAM and hardware performance characteristics.
- You might be able to run more threads in parallel if you have a smaller `CustomerSampleSize` because the RAM usage per thread goes down. However, decreasing this value also decreases the amount of time that is required to process a chunk. This configuration also decreases the ration between chunk processing and preprocessing, causing the latter to become a bottleneck sooner.
- If you optimize the number of threads that process the cross-customer rules, you might be able to increase performance further by increasing the number of threads that are used to read data from a sample of customers or the threads that are used to write the optimized contacts to a staging table.

  You define the number of threads that read data from a sample of customers with the `ProcessingThreadQueueSize` configuration property. You define the number of threads that write data to a staging table with the `PostProcessingThreadQueueSize` configuration property.

For more details about tuning multi-threaded optimization for your specific Contact Optimization implementation, contact your IBM representative.

Setting CustomerSampleSize

Properly configuring `CustomerSampleSize` for best Contact Optimization session run time while preserving optimality takes some consideration.

CustomerSampleSize and "chunks"

Contact Optimization works by dividing up the proposed contacts into random subsamples of customers called "chunks." When using a single thread, Contact Optimization processes one chunk at a time. All proposed contacts and contact history that belong to a single customer are processed with that customer in the chunk in which that customer belongs. A customer can belong to a single chunk only. Each chunk is created on a set of random customers. The accuracy of the optimization algorithm depends on these chunks of customers being statistically similar to each other. A larger chunk size makes this requirement more likely. Cross-customer capacity constraints are evenly distributed across the chunks. For example, your Contact Optimization session contains a constraint specifying there is a maximum of 1000 offer A allowed. If the Contact Optimization session is run with 10 chunks, each chunk has a capacity rule that allows a maximum of 100 offer A.

You use the algorithm tuning variable `CustomerSampleSize` to set the maximum chunk size. The larger the chunk, the more accurate the results. However, the session runtime and memory resources also increase. Do not use chunk sizes greater than 10,000 without careful planning. Many systems do not have enough memory resources to process more than 10,000 customers at a time. This lack of

memory resources results in a failed Contact Optimization session run with an out of memory error. In many cases, a larger chunk size might not significantly increase the optimality of the solution at all, but still takes more time and memory to run. Optimality is measured as the sum of scores of the surviving transactions in the optimized contacts table (OCT). You might need to tune the CustomerSampleSize based on your specific optimization problem and performance needs.

In a simple optimization scenario where there are no cross-customer capacity rules defined, there is no added benefit from using larger chunk sizes.

During chunk building, Contact Optimization also creates set of rules, For Each Customer and Custom Capacity, for each chunk. The For Each Customer (FEC) rule uses the Min/Max constraints as it is. However, for the Custom Capacity (CC) rules, the Min/Max constraints are divided by the number of chunks and assigned to each chunk. This creates approximately an equal quota or distribution of capacity for each chunk for a given CC rule.

CustomerSampleSize and cross-customer capacity rules

To understand the cases where cross-customer capacity rules are used, you must understand how those rules are applied to multiple chunks. Consider the case where there is a single Min/Max # Offers Capacity rule with minimum set to 20 and maximum set to 1,000 for channel email. If there are 100,000 customers and a maximum chunk size of 10,000, each chunk is processed using a modified rule where the maximum is 100. Contact Optimization calculates the modified rule maximum value by dividing the rule maximum value (1,000) by the number of chunks (10).

A smaller maximum chunk size might cause more chunks to be created. This setting makes it more likely that a rule might depend on some element (such as email channel) that is less numerous than the number of chunks. If the chunk size is reduced to 100 there would be 1,000 chunks. Now, the minimum for the rule is less than the number of chunks, which makes the modified rule 0.02 (20 divided by 1,000). In this case, 2% of the chunks use a rule with a minimum of 1, and the other 98% of the chunks use a minimum of 0. If each chunk is statistically similar regarding channel email, Contact Optimization processes the rule as expected. A problem occurs when there are fewer customers offered emails than there are chunks. If only 500 customers are offered emails, each chunk has only a 50% chance of containing a customer offered an email. Also, the odds that a particular chunk has both a customer offered an email and a minimum 1 rule is only 1%. Instead of meeting the specified minimum of 20, Contact Optimization returns only 5 on average.

The number of chunks depends on the chunk size and the total number of customers. Since the maximum chunk size is 10,000, the minimum number of customers with a significant element (an item that is used in a rule) must be not less than the number of customers that are divided by 10,000 to achieve optimal results. It might seem that increasing the number of proposed contacts to maintain statistical similarity would lower performance, and it is true that more proposed contacts add to the processor usage. This usage can be more than offset if it allows a smaller chunk size to be used, since these smaller chunks can be processed more quickly.

Indexing Contact Optimization tables

Create indexes on several of your Contact Optimization tables to improve performance.

Note: The Contact Optimization installer indexes these tables properly. However, if you have issues with installation or upgrade, you might need to index these tables manually.

When you create the tables that are required for each audience level, for example the `UA_ContactHistory` tables, create these indexes on each table.

See the documentation for your database for the exact command to create an index. For example:

```
CREATE INDEX IndexName ON TableName ( ColumnName )
```

The following table gives the table names and the columns to index. All of these tables exist in the Campaign system tables. In addition to the following existing indexes, you can add extra indexes on the Campaign system tables to improve run time performance of a Contact Optimization session run. For more information about extra indexes, see the *IBM Contact Optimization Troubleshooting and Tuning Guide*.

Table 30. Contact Optimization tables to index

Table	Columns	More information
`audience_segMembership`	• *Audience ID* • `SegmentID`	Using strategic segments is optional for Campaign flowcharts and Contact Optimization sessions. If you are using strategic segments, have one segment membership table per audience level. Create indexes on all segment membership tables. Each *Audience ID* column must match the corresponding `Audience ID` defined in Campaign.
`UACO_PCTsessionID`	• `OptimizeID` • `ContactDateTime` • *Audience ID* • `ContactID` • `TempOfferHistID` • `OfferID`	This table is automatically indexed when created by Optimize 7.5.2 or later version. If you are upgrading from a previous version of Contact Optimization, you must index these tables manually. There is a `UACO_PCTsessionID` table for each Contact Optimization session where *session* is the `ACOSessionID`. `ACOSessionID` is a unique identifier for each Contact Optimization session that is defined in the `UACO_OptSession` table. Each *Audience ID* column must match the corresponding `Audience ID` defined in Campaign.

Table 30. Contact Optimization tables to index (continued)

Table	Columns	More information
UACO_POA*sessionID*	• OptimizeID • TempOfferHistID	This table is automatically indexed when created by Optimize 7.5.2 or later version. If you are upgrading from a previous version of Contact Optimization, you must index these tables manually. There is a UACO_POA*sessionID* table for each Contact Optimization session where *session* is the ACOSessionID. ACOSessionID is a unique identifier for each Contact Optimization session that is defined in the UACO_OptSession table.
UACO_RC*sessionID*	• RandomIndex • *Audience ID*	This table is automatically indexed when created by Optimize 7.5.2 or later version. If you are upgrading from a previous version of Contact Optimization, you must index these tables manually. There is a UACO_RC*sessionID* table for each Contact Optimization session where *session* is the ACOSessionID. ACOSessionID is a unique identifier for each Contact Optimization session that is defined in the UACO_OptSession table. Each *Audience ID* column must match the corresponding Audience ID defined in Campaign.
*audience*_ContactHistory	• PackageID • *Audience ID* • CellID • ContactDateTime	The PackageID and CellID columns are already indexed in the sample UA_ContactHistory table that is created when you install Campaign. Each *Audience ID* column must match the corresponding Audience ID defined in Campaign.
*audience*_dtlContactHist	• *Audience ID* • ContactDateTime • TreatmentInstID	Each *Audience ID* column must match the corresponding Audience ID defined in Campaign.

Controlling queries to contact history

Using contact history improves optimality but can hinder performance.

When optimizing contacts, Contact Optimization has several rules to manage contact fatigue such as Max # Duplicate Offers, Max # Packages, and Min/Max # Offers. All of these rules include the **over the time period** or **within the time period** section.

If you always set the time period to 0 in all the rules, it indicates that this Contact Optimization session does not use time periods for any of the rules. In such a case,

you can control how Contact Optimization queries the contact history tables during the Contact Optimization session run using the `UseFutureContacts` configuration property.

If you set `UseFutureContacts` to `false`, Contact Optimization optimizes joins with the contact history tables if your rules include time periods. If your rules do not include any time periods, Contact Optimization does not query the contact history tables at all, which can improve performance.

If you set `UseFutureContacts` to `true`, Contact Optimization always queries the contact history tables. While this impacts performance, it also ensures that placeholders for contacts that are sent in the future are considered when managing contact fatigue.

Setting UOSQLOnConnect

There is an additional configuration property, `UOSQLOnConnect`, that is specific to Contact Optimization in `Campaign|Partitions|partition[n]|dataSources`.

If you plan to enable Contact Optimization non-ascii data, you must configure `UOSQLOnConnect` similar to `SQLOnConnect`. For more information about configuring non-ascii data and the configuration properties `UOSQLOnConnect` and `SQLOnConnect`, see the *IBM Campaign Administrator's Guide*.

Chapter 10. Contact Optimization configuration properties

This section describes the IBM Contact Optimization configuration properties that are found on the Configuration page.

Campaign | unicaACOListener

These configuration properties are for Contact Optimization listener settings.

serverHost

Description

Set to the host server name for the Contact Optimization installation.

Default value

localhost

serverPort

Description

Set to the host server port for the Contact Optimization installation.

Default value

useSSL

Description

Set to `True` to connect to the Marketing Platform server by using SSL. Otherwise, set to `False`.

Default value

False

Valid Values

True | False

keepalive

Description

The number of seconds the Campaign web application waits between sending messages to the Contact Optimization Listener to keep the connection active. Using `keepalive` keeps connections open if your network is configured to close inactive connections.

If set to `0`, the web application does not send any messages.

This `keepalive` property is separate from the Java socket keepAlive.

Default value

0

Valid Values

Positive integer

logProcessId

Description

> Set to yes to log the ID of the Contact Optimization listener process in the Contact Optimization Listener log (unica_acolsnr.log, in the logs directory of your Contact Optimization installation). Otherwise, set to no.

Default value

> yes

Valid Values

> yes | no

loggingLevels

Description

> You can set the details for the Contact Optimization listener data you log.

> This setting affects the Contact Optimization Listener log (unica_acolsnr.log, in the logs directory of your Contact Optimization installation).

Default value

> MEDIUM

Valid Values

> LOW | MEDIUM | HIGH | ALL

logMaxFileSize

Description

> Set this integer to the maximum size for a log file, in bytes. Contact Optimization creates a file after the log file reaches this size. This setting affects the Contact Optimization Listener log (unica_acolsnr.log, in the logs directory of your Contact Optimization installation).

Default value

> 20485760

enableLogging

Description

> Set to True to enable logging. Otherwise, set to False. This setting affects the Contact Optimization Listener log (unica_acolsnr.log, in the logs directory of your Contact Optimization installation).

Default value

> True

Valid Values

> True | False

logMaxBackupIndex

Description

Set this integer to the number of backup files to store. This setting affects the Contact Optimization Listener log (`unica_acolsnr.log`, in the `logs` directory of your Contact Optimization installation).

Default value

5

loggingCategories

Description

You can specify the categories of data you want to log in a comma-separated list. This setting affects the Contact Optimization Listener log (`unica_acolsnr.log`, in the `logs` directory of your Contact Optimization installation).

Default value

all

Valid Values

`all` | `bad_order` | `cell_access` | `commands` | `config` | `data_errors` | `dbload` | `file_access` | `general` | `memory` | `procrun` | `query` | `sort` | `sysquery` | `table_access` | `table_io` | `table_mapping` | `webproc`

defaultFilePermissions (UNIX only)

Description

The permission level for the generated log files in the numeric format. For example, 777 for read, write, and execute permissions.

Default value

660 (Owner and Group have read and write access only)

Campaign | partitions | partition[n] | Optimize | sessionRunMonitor

These configuration properties are for sessionRunMonitor settings.

progressFetchDelay

Description

Set this integer to the number of milliseconds that the web application waits before it obtains progress information from the listener.

Default value

250

Campaign | partitions | partition[n] | Optimize | MemoryTuning

These configuration properties are for the MemoryTuning settings.

MaxRamUsage

Description

Defines the maximum memory in MB used to cache the contact history. This value must be at least as large as one contact history record.

Default value

Campaign | partitions | partition[n] | Optimize | AgentTemplateTables

These configuration properties define template tables for Agent Capacity Optimization.

AgentInfoTemplateTables

Description

Enter a comma-separated list of table names for the Agent Information Template Table. Each table contains the unique identification values (IDs) of agents and their capacity. These tables should be present in the Campaign system database.

Default value

There is no default value defined.

AgentCustomerRelTemplateTables

Description

Enter a comma-separated list of table names for the Agent Customer Relationship Template Table. The Agent Customer Relationship table contains the unique identification values (IDs) of agents and the audience ID of associated customers. This table should be present in the Campaign system database. The audience level of the audience ID must be the same as the audience level of your Contact Optimization session.

Default value

There is no default value defined.

Campaign | partitions | partition[n] | Optimize | userTemplateTables

This property defines the template tables that are used by the PCT and OCT.

tablenames

Description

Enter a comma-separated list of table names for the Contact Optimization template tables. These template tables can be used to add user-specific fields to the proposed contacts table (PCT) or the optimized contacts table (OCT).

Default value

`UACO_UserTable`

Campaign | partitions | partition[n] | Optimize | TestRun

This property defines the options to use for performing a test run of your Contact Optimization session.

TestRunSamplePercent

Description

The test run sample percentage is the percentage of customers to use from the PCT to perform a test run of your Contact Optimization session.

Default value

> 10

Valid values

> 1 - 100

Campaign | partitions | partition[n] | Optimize | AlgorithmTuning

These configuration properties define settings that you can use to tune your optimizations.

MaxAlternativesPerCustomerEvaluated

Description

> The maximum number of times Contact Optimization tests combinations of proposed transactions, or alternatives, to find the optimal alternative for a customer.
>
> For example, if the following are true:
> * The offers that are associated with a customer in the proposed contacts table (PCT) are A,B,C,D, where the scores for these offers are A=8, B=4, C=2, D=1
> * The MaxAlternativesPerCustomerEvaluated property is 5
> * A rule of MAX # Offers=3 exists
>
> Then, the alternatives that are tried might be as follows:
> * ABC score = 14
> * ABD score = 13
> * AB score = 12
> * ACD score = 11
> * AC score = 10
>
> Because the number of alternatives to test might be large, this value limits the effort the core algorithm spends on a customer before Contact Optimization moves to the next customer in the PCT.

Default value

> 1000

CustomerSampleSize

Description

> If your number of customers that are optimized is greater than `CustomerSampleSize`, Contact Optimization divides the customers into groups of no greater than `CustomerSampleSize`. Contact Optimization then optimizes each sample group separately. Rules that span across groups, such as a Custom Capacity rule, are still met. Increasing this number might increase optimality but hinder performance.
>
> The most optimal `CustomerSampleSize` is equal to your number of customers. However, processing a large set of data might take a prohibitive amount of time. By dividing customers into smaller groups for Contact Optimization to process at a time, you can increase performance with minimal loss to optimality.

Default value

```
1000
```

Valid Values

Positive integer

MaxIterationsPerCustomerSample

Description

The maximum number of iterations Contact Optimization processes a group of customers. Contact Optimization processes a group of customers until optimality is reached or the number of iterations equals `MaxIterationsPerCustomerSample`.

Search for the following information in the session log to observe the effect of setting changes for `MaxIterationsPerCustomerSample`.
- Maximum, minimum, and mean number of iterations per customer chunk
- Maximum, minimum, and mean number of alternatives that are created per customer
- Maximum, minimum, and mean number of alternatives that are tried per customer
- Standard deviation of iterations

Default value

```
1000
```

Valid Values

Positive integer

CustomerRandomSeed

Description

The random seed represents the starting point that Contact Optimization uses to select records randomly before Contact Optimization populates sample groups that are defined by the `CustomerSampleSize`. If you have fewer customers than `CustomerSampleSize`, this property has no effect on the optimization.

You might want to change the random seed if you think your current random sample produces highly skewed results.

Default value

```
1928374656
```

Valid Values

Positive integer

MaxCustomerSampleProcessingThreads

Description

The maximum number of threads Contact Optimization uses to process the optimization algorithms. In general, the higher you set `MaxCustomerSampleProcessingThreads`, the more you might improve performance. However, the performance increase is limited by several factors, including the type and number of optimization rules you use and

your hardware. For detailed instructions on tuning your Contact Optimization implementation, contact your IBM representative.

Default value

> 1

Valid Values

> Positive integer

ProcessingThreadQueueSize

Description

> The number of threads available to Contact Optimization to use to read a customer sample from the PCT. Increasing the number of threads might improve the performance of a Contact Optimization session. For detailed instructions on tuning your Contact Optimization implementation, contact your IBM representative.

Default value

> 1

Valid Values

> Positive integer

PostProcessingThreadQueueSize

Description

> The number of threads available to Contact Optimization to write a customer sample to a staging table for the OCT. Increasing the number of threads might improve the performance of a Contact Optimization session. For detailed instructions on tuning your Contact Optimization implementation, contact your IBM representative.

Default value

> 1

Valid Values

> Positive integer

EnableMultithreading

Description

> If true, Contact Optimization attempts to use multiple threads when processing the optimization algorithms. You can configure the number of threads with the `MaxCustomerSampleProcessingThreads`, `ProcessingThreadQueueSize`, and `PostProcessingThreadQueueSize` configuration properties. If false, Contact Optimization uses a single thread when processing the optimization algorithms.

Default value

> True

Valid Values

> True | False

EnableMaxCapacityConsumption

Description

> If you get Contact Optimization results that underuse the channel capacities, enable EnableMaxCapacityConsumption to reduce the loss of channel capacity. Then, rerun the Contact Optimization session. If the parameter is set to true, Contact Optimization uses an enhanced algorithm for trying to meet maximum constraints that are set in Cross Customer rules (Min/Max # Offers Capacity rule and Custom capacity rule). However, if this is used, the session run time might increase depending on the data that is provided to the session.

Default value

> False

Valid Values

> True | False

EnableBufferingHistoryTransactions

Description

> If true, Contact Optimization writes contact history transactions to a file to read during a Contact Optimization session run. If false, Contact Optimization reads from the UA_ContactHistory table in the Campaign system tables.

> If false, Contact Optimization creates a read lock on the UA_ContactHistory table for the length of the Contact Optimization session. This lock might cause attempts to write to the table to fail if you are using a database load utility. If true, Contact Optimization creates a read lock on the table only for the time it takes to write the query to a file.

Default value

> False

Valid Values

> True | False

MinImprovementPercent

Description

> Use this configuration property to stop processing a group of customers when the rate of optimization reaches a specified level. The MinImprovmentPercent property sets a rate of score improvement, which is measured as a percentage, to continue iterating. The default is zero, which means that there is no limit to the number of iterations possible.

Default value

> 0.0

UseFutureContacts

Description

> If you are not using time periods in any of your optimization rules, you can prevent Contact Optimization from querying the Contact History

tables to improve performance. You can control this behavior with the UseFutureContacts configuration property.

If you set UseFutureContacts to false, and the optimization rules for your Contact Optimization session do not use time periods, Contact Optimization does not query the Contact History tables. This setting improves the time that is needed to run the Contact Optimization session. However, if the Contact Optimization session uses time periods, Contact History tables are queried.

If you record potential future contacts in Contact History, you must set UseFutureContacts to true. For example, if you know that you are sending an email communication next week about a special promotion to certain customers, those contacts might already be in the Contact History tables as placeholders. In this case, set UseFutureContacts to true and Contact Optimization always queries the Contact History tables.

Default value

> False

Valid Values

> True | False

ContinueOnGenerationLoopError

Description

> If False, Contact Optimization stops the Contact Optimization session if it is not possible to process a set of customers for the following reasons:
> - The outer algorithm cannot satisfy the capacity rules with any of its alternate solutions.
> - The core algorithm is not creating alternative solutions.
>
> Contact Optimization logs this condition with the following error:
> ```
> The generation loop was unable to eliminate all slack
> and surplus variables
> ```
>
> If True, Contact Optimization skips all the customers in the set that triggered the generation loop error. Contact Optimization then continues processing the next customer set in the Contact Optimization session. It is possible that Contact Optimization might have violated some rules and generated this result without honoring all rules and data. If Optimize|logging|enableBailoutLogging property is also set to TRUE, the skipped customers are logged to unprocessables_*10-digit-session-ID*.csv in the partition/partition[n]/logs directory in the Contact Optimization installation directory. Customers skipped because of the generation loop error have the reason SkippedOnGenerationLoopError.
>
> See the *Contact Optimization Troubleshooting and Tuning Guide* for details about how to avoid the generation loop error.

Default value

> False

Valid Values

> True | False

Related concepts:
"Contact Optimization session-level advanced settings" on page 18

Campaign | partitions | partition[n] | Optimize | DatabaseTuning

These configuration properties are for tuning the database.

UpdateSessionTableStatistics

Description

The UpdateSessionTableStatistics parameter adds a query for updating statistics of the PCT, RC, and POA tables during a Contact Optimization session run. You can tune this parameter at the session level without affecting other sessions. Keeping up-to-date index statistics can help improve the performance of the query on these tables. This parameter is also present in the global configuration settings of Contact Optimization.

Depending on your database, the method to write a query to update statistics varies.

Use following value to update statistics of DB2 tables:

```
CALL SYSPROC.ADMIN_CMD('RUNSTATS ON TABLE <TABLENAME>')
```

Note: If you use DB2 8 or below, you must write your own custom stored procedure for implementing the functionality that is similar to SYSPROC.ADMIN_CMD. Also, you can write your own stored procedure to update statistics and start it through the UpdateSessionTableStatistics parameter at run time to update statistics.

Use the following value to update statistics of Oracle tables:

```
analyze table <TABLE> compute statistics
```

Use the following value to update statistics of SQL Server tables:

```
UPDATE STATISTICS <TABLE>
```

Important: If you run this query, the database user in UA_SYSTEM_TABLES must have privileges to run query, which is mentioned in this UpdateSessionTableStatistics parameter. For the session to run successfully, the correct value must be passed or left blank. If the value passed is incorrect, then the session run fails.

Default value

No default value defined.

AllowTempTables

Description

The AllowTempTables parameter creates temporary tables instead of database views, and populates them during the Contact Optimization session run. Enabling this parameter helps in improving run time performance of the Contact Optimization session run. For more information about this parameter, see *Optimize a transaction query for performance improvements* in the *IBM Contact Optimization Troubleshooting and Tuning Guide*.

Default value

True

Valid values

```
True | False
```

Campaign | partitions | partition[n] | Optimize | Debug

This property defines debug level for processing the PCT.

ExtraVerbose

Description

>Set this value to `yes` to provide detailed logs on the rows that are processed in the proposed contacts table (PCT). By default, all rows are logged if you set this value to yes.
>
>If you do not want processed rows of the PCT to be logged, set this value to `no`.

Default value

>`no`

Valid Values

>`yes | no`

Related concepts:

"Contact Optimization session-level advanced settings" on page 18

Campaign | partitions | partition[n] | Optimize | TestRun

This property defines the options to use for performing a test run of your Contact Optimization session.

TestRunSamplePercent

Description

>The test run sample percentage is the percentage of customers to use from the PCT to perform a test run of your Contact Optimization session.

Default value

>`10`

Valid values

>`1 - 100`

Campaign | partitions | partition[n] | Optimize | logging

This property defines logging settings for Contact Optimization.

logMaxBackupIndex

Description

>Set this integer to the number of backup files to store. This effects the Contact Optimization Server log (`unica_acosvr_SESSIONID.log` in the `partitions/partition[n]/logs` directory of your Contact Optimization installation.).

Default value

logProcessId

Description

> Set to True to log the ID of the Contact Optimization server process in the
> Contact Optimization Server log (unica_acosvr_*SESSIONID*.log in the
> partitions/partition[n]/logs directory of your Contact Optimization
> installation). Otherwise, set to False.

Default value

> False

Valid Values

> True | False

loggingCategories

Description

> You can specify the categories of data you want to log in a
> comma-separated list. This setting affects the Contact Optimization Server
> log (unica_acosvr_*SESSIONID*.log in the partitions/partition[n]/logs
> directory of your Contact Optimization installation.).

Default value

> all

Valid Values

> all | bad_order | cell_access | commands | config | data_errors |
> dbload | file_access | general | memory | procrun | query | sort |
> sysquery | table_access | table_io | table_mapping | webproc

loggingLevels

Description

> You can set the details for the server data you log.
>
> This setting affects the Contact Optimization Server log
> unica_acosvr_*SESSIONID*.log in the partitions/partition[n]/logs
> directory of your Contact Optimization installation).

Default value

> MEDIUM

Valid Values

> LOW | MEDIUM | HIGH | ALL

enableBailoutLogging

Description

> If set to True, Contact Optimization generates a separate file in
> comma-separated value (CSV) format. The CSV file contains details of
> customers Contact Optimization cannot process. Contact Optimization
> cannot process a customer if either of the following are true:

- Contact Optimization exceeds the limit that is set by `MaxAlternativesPerCustomerEvaluated`, and no legal alternatives are found for a customer.
- `ContinueOnGenerationLoopError` is set to True and Contact Optimization encounters a generation loop error.

Each row corresponds to one customer. The first column is the customer ID and the second column is the reason why Contact Optimization was not able to process the customer. The file is named `unprocessables_sessionID`.csv and is in the `partitions/partition[n]/logs` directory of your Contact Optimization installation.

If set to `False`, Contact Optimization does not generate a list of customers that cannot be processed.

Default value

> `False`

Valid Values

> `True | False`

logMaxFileSize

Description

> Set this integer in bytes to the maximum size for a log file. Contact Optimization creates a file after the log file reaches this size. This setting affects the Contact Optimization Server log (`unica_acosvr_SESSIONID`.log in the `partitions/partition[n]/logs` directory of your Contact Optimization installation.).

Default value

> `10485760`

enableLogging

Description

> Set to `True` to enable logging. Otherwise, set to `False`. This setting affects the Contact Optimization Server log (`Optimize_installation_directory/partitions/partition[n]/logs/unica_acosvr_SESSIONID`.log).

Default value

> `True`

Valid Values

> `True | False`

defaultFilePermissions (UNIX only)

Description

> The permission level for the generated log files in the numeric format. For example, 777 for read, write, and run permissions.

Default value

> 660 (Owner and Group have read and write access only.)

Related concepts:

"Contact Optimization session-level advanced settings" on page 18

Campaign | unicaACOOptAdmin

These configuration properties define settings for the unicaACOOptAdmin tool.

getProgressCmd

Description

Specifies a value that is used internally. Do not change this value.

Default value

optimize/ext_optimizeSessionProgress.do

Valid Values

`optimize/ext_optimizeSessionProgress.do`

runSessionCmd

Description

Specifies a value that is used internally. Do not change this value.

Default value

optimize/ext_runOptimizeSession.do

Valid Values

`optimize/ext_runOptimizeSession.do`

loggingLevels

Description

The `loggingLevels` property controls the amount of detail that is written to the log file for the Contact Optimization command-line tool, which is based on severity. Available levels are LOW, MEDIUM, HIGH, and ALL, with LOW providing the least detail (that is, only the most severe messages are written). The ALL level includes trace messages and is intended primarily for diagnostic purposes.

Default value

HIGH

Valid Values

`LOW | MEDIUM | HIGH | ALL`

cancelSessionCmd

Description

Specifies a value that is used internally. Do not change this value.

Default value

optimize/ext_stopOptimizeSessionRun.do

Valid Values

`optimize/ext_stopOptimizeSessionRun.do`

logoutCmd

Description

Specifies a value that is used internally. Do not change this value.

Default value

optimize/ext_doLogout.do

Valid Values

`optimize/ext_doLogout.do`

getProgressWaitMS

Description

Set this value to the number (integer) of milliseconds between two successive polls to the web application to get progress information. This value is not used if you do not set `getProgressCmd`.

Default value

1000

Valid Values

`An integer greater than zero`

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- Detailed steps to reproduce the issue.
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- Information about your product and system environment, which you can obtain as described in "System information."

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