Workforce Management Web for Supervisors Help

Overlays Primer

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In WFM, each event in an overlay represents an abnormality in historical data or in the future—that is, a fluctuation in Interaction Volume (IV) or Average Handling Time (AHT) that is not one of the usual seasonal, intra-week, or intra-day trends. If these events point to the same kind of abnormality, one that has happened multiple times in the past or can happen in the future, then overlay events can be arranged into overlay groups that are simply called *overlays*. The most common overlay examples are advertising campaigns and catalog drops.

An overlay impacts prediction data directly, when the event in a particular overlay is situated over a prediction interval.

Overlay Types

There are two types of overlay, defined by how WFM calculates their impact on prediction data:

1. A **Multiplicative Overlay** increases or decreases every step of predictive data by a specific percentage. That percentage is the overlay's impact distribution, multiplied by event strength. The total of the interval is affected.

   This type of overlay was called a factor before release 7.6.1. Each step (daily or hourly) of predictive data that is covered by the overlay is adjusted by a certain percentage and multiplied by event strength.

2. An **Overriding Overlay** redistributes the volume of an event interval. The total of the interval does not change. The volume may be moved from one event-step to another.

   This type of overlay was introduced in version 7.6.1, when factor was renamed multiplicative overlay. It is designed to keep the predicted total of the affected period and, instead, adjust the distribution of the volumes within that period. The events of this overlay type are applied as the last step of prediction. The seasonal components (intra-day, daily, and yearly) and multiplicative overlays are applied before overriding overlays are calculated.

   The overriding overlay distributes the volumes according to the weight (or the percentage) of each event-step (daily or hourly). It adjusts the volume of each event-step, so that the event-step receives its part of the total of the whole event period according to its weight.

   For example, an overriding overlay has three event-steps with respective weights of 20, 30, and 50. If the predicted total of the entire interval is 1,000, then the first event-step will get 200, the second 300, and the last 500. Note that the initially predicted total of the event-step is not taken into account while calculating an impact of this overlay type. The weight of an event-step that is determined by the overlay itself, as well as the predicted total of the whole interval that is affected by the event, are taken into account.

   When the event-step (daily or hourly) is calculated, its total is distributed to 15-minute timesteps proportionally, to a volume of each time step before the event was applied. So, the intra-day or intra-hour pattern is preserved.

   When the event of an overriding overlay type overlaps with the other event of the same type, it cannot be calculated, even if both belong to different overlays. However, it can overlap with events of

multiplicative overlays.

Distributing Event Impact

There are three ways to determine the impact of each event-step, and they apply to both overlay types:

1. **By start-end**—The impact distribution of an overlay is determined by specified start and end impact values. The impact is gradually changed by the same amount for every event-step, from the start value to the end value. For example, if the starting value is 100 and the ending value is 200, and the overlay is daily with a length of six days, then the impact on the first day is 100, on the second day 120, and then 140, 160, 180, and finally 200 on the sixth and final day.

2. **By keeping the whole detailed distribution**—The overlay saves the impact of each event-step separately. It can be either precalculated, entered by the user, or mixed.

3. **By calculating every time during the prediction (*always calculated*)**—The impact of the overlay is always calculated during the prediction. For successful calculation, the historical period should include one or more events that are in the same overlay. The impact of the overlay is determined by the prediction algorithm, according to historical data, and then used in prediction.

Ignoring Historical Data

Any event under an overlay type may have the **Ignore Historical Data** flag set, which specifies whether the historical-data interval data that is covered by that event is used in calculations of volume prediction or overlay impact (see Calculating Overlay Impact).

If an event does not have the **Ignore Historical Data** flag set, then the data that is covered by the event is considered for prediction.

There is no additional processing of historical data that is affected by the event, other than ignoring it or using it.

Calculating Overlay Impact

The impact of an overlay can be determined by analyzing historical data and is done by prediction algorithm. The algorithm analyzes the period of historical data, which contains one or more events of overlay that are to be calculated.

Overlays can be precalculated before starting volume forecasting or during volume forecasting (see Distributing Event Impact). Given the same historical data and using the same method, the results should be identical.

Multiplicative overlays are calculated by separating the seasonal component (yearly, daily, or intra-

day) from the event impact for each event of the overlay in the given historical data. Then, the impact is divided by event strength and averaged. When the impact is applied to an event on the prediction interval, it is multiplied by the strength of that event.

In **Overriding Overlays**, the percentage of each event-step in the total of the whole event period is calculated for each event, and then averaged.

For example, a historical period has two events in a daily overlay, which is 3 days long. The days of the first event are 150, 200, 150 (30%, 40%, and 30% of the total, respectively), and the days of the second event are 150, 150, 200 (30%, 30%, and 40% of the total, respectively). Each event-step (in this case, a day) is averaged individually, and the overlay is calculated as 30%, 35%, 35%, respectively.