How the Optimizer Uses Partitions and Preferences

In the Schedule25 Optimizer, the placement algorithm uses location data (namely, partitions and features) to determine where classes are placed.

- A **location** has exactly one **partition** and any number of **features**.
- An **organization** has any number of **partition preferences**.
- An **event** has exactly one **primary organization** and any number of **feature preferences**.

Campus Partitions

Partitions are the "basic unit of scheduling" for departmental preferences. Typically they represent a single building but could be as small as a few rooms or as large as a whole section of campus.

Each organization in 25Live groups these partitions into four tiers or levels, representing how desirable their locations are to that department. What is an ideal spot for a math class may be poor for a language arts lecture, and vice versa.

All partitions on the same "level" for an organization are treated equally. The Optimizer will attempt to find an appropriate location in the first level, and will only look at partitions in the next level once all locations have been ruled out. If a partition does not exist on any level of an organization's preferences, then the Optimizer won't place it.

Setting partition preferences in the 25Live organization details view.

For example, Schedule25 might first attempt to place a section in this department in the Baker Classroom Complex and, if it can't be placed there, in the Business Administration Quad. Only if no locations are available in those partitions would it attempt to place the section in the Highland Science Center. The class would never be placed in the University Sports Complex.

Location Features

Location features represent a room's amenities or other fixed qualities that are relevant to scheduling, such as equipment, accessibility options, seating type, or technology levels. In order to be used by the Optimizer, they must be Schedule25-enabled in 25Live system settings.

Events can be imported from your SIS with preferences for one or more location features. The Optimizer treats these as **hard requirements**, meaning that it will only place a section in a room with **all** of the preferred features.

The more feature preferences a section has, the harder it is to place. Too many of them may flag an event as "impossible to place" in the Optimizer results.

Balancing Preferences With Utilization

One run setting allows you to relax some of the Optimizer's restrictions when placing sections. The **Optimize Results For** option allows you to choose between the following:

- Best utilization (default)
- Better overall placement with lower utilization
- Best overall placement with lower utilization and lower preferred partition placement

With the first option, the Optimizer maximizes the utilization for each class but may place fewer classes overall. In the second option, the Optimizer may place classes in slightly sub-optimal rooms in order to find rooms for more classes. In the third option, the Optimizer will begin considering locations in partitions at lower preference levels even if there are available rooms at a higher level.

At no point will the Optimizer place sections into locations without all the right features or in a partition that isn't ranked by an organization.

These options are further explained in the following video: