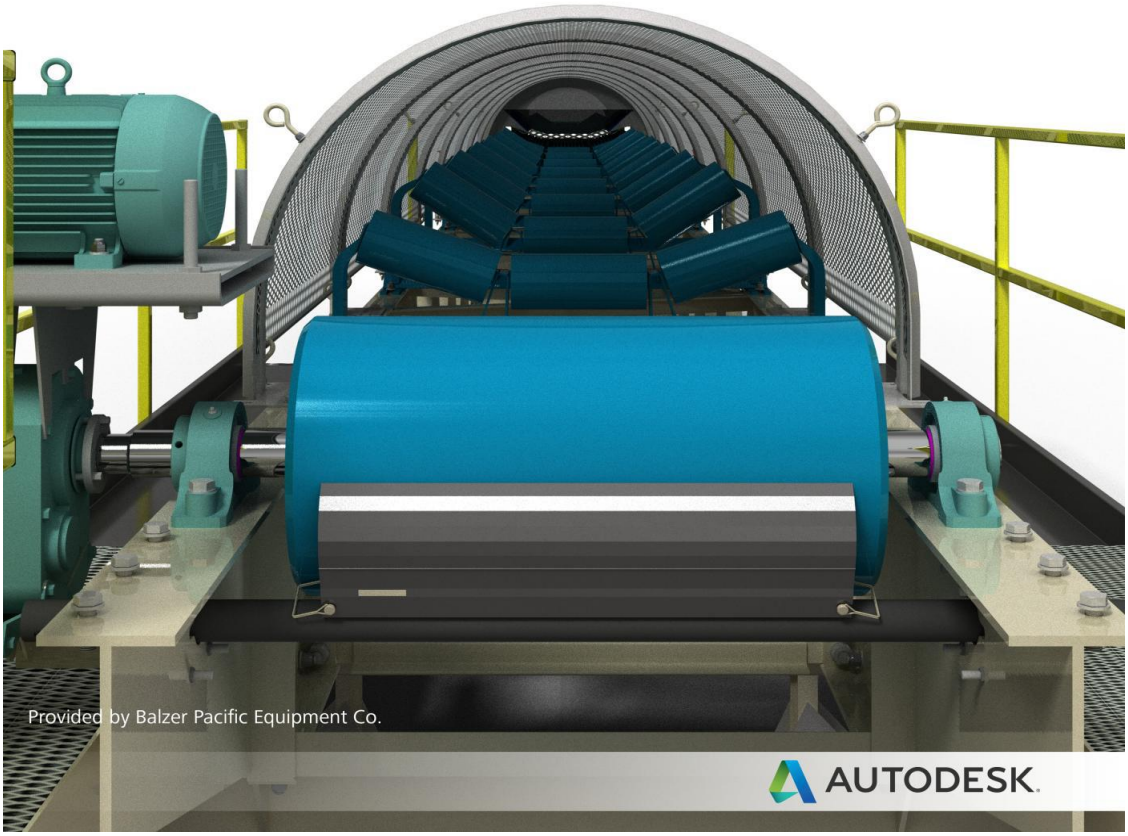
Express Mode

AUTODESK® **INVENTOR®** 2014

Large Assembly Performance



Express Mode

The elevator pitch (literally speaking) - Imagine you were taking the elevator to the 100th top floor of an office building and the elevator stops at every single floor regardless of whether or not someone got out.....That would describe what Full mode (non-express mode) does. Alternately, Express mode would be equivalent to going from 1st to 100th floor without making any stops or with minimal stops when someone really, really wants to get out.

When opening a top level assembly in Full mode, the open process visits every single part/sub-assembly file and loads all relevant data (model, graphics. Styles, materials etc and sometimes the feature info) required to display and work with. This was getting to be very painful for users working with very large assemblies as they would be loading a lot of unnecessary data just to even view the model leave alone work with it.

In express mode, what we do is we save just enough model data and graphics information which completely describes the model - all saved at the top level assembly file. This results in the assembly being saved to grow bigger as it needs to save this extra information.

On a subsequent open of the top assembly in express mode, we simply restore all the previously saved express data and display it without opening any of the referenced parts or sub-assemblies. This enables users to open the top level assembly in express mode much faster because we only load the data saved in the top assembly file and not have to hit the disk to open and load data from its child parts or sub-assemblies.

When a top assembly is opened in express mode, it will behave just like the same assembly being opened in full mode in terms of showing the correct information, model graphics and handle notifications about updates or changes to dependent parts or sub-assemblies.

General Considerations

1. Any assembly file can be opened in express mode as long as the express data is first saved.
2. Application options are provided to enable or disable this behavior
3. Express data is saved only the top level active assembly being saved.
4. Task Scheduler can be used to automatically generate this express data in all assembly files

Part Files

1. Parts do NOT save express data nor do they restore express data

Presentation Files

1. Presentations do not use the express data and always use the full data

Drawing Files

1. 2014 drawing views do not use express data
2. Therefore the application will load all necessary data including parts/sub-assemblies
3. 2015 drawing views USE express data and the above limitation is removed.

Weld Assembly Files

1. Weld Assembly Files save express data so that they can be used as a sub-assembly
2. Weld Assembly Files cannot be opened in Express mode

Edit Scenario
1. If referenced parts or sub-assemblies are modified then the edits are automatically consumed when the top assembly is opened in express mode
2. The express assembly will and should reflect all changes done on referenced parts
3. The cached data (model/graphics) will be updated in memory
4. A subsequent save of the top assembly will refresh the stored cache information to disk

Design Views Representations
1. Design Views handshake well with Express mode
2. It's also recommended (but not required) that user saves express data when the design view is set to Master/Default where everything is visible
3. This makes it easy to switch between different design views with minimal or no impact on performance

Level of Detail
1. Level of Detail workflows are incompatible with Express mode workflows
2. Only the last active LOD participates in the express data
3. Switching to a different LOD on open or after opening the assembly in express mode will automatically convert the assembly to Full mode

Edit-in-Place of child parts/sub-assemblies
1. 2014 disables edit in place of parts/sub-assemblies within the context of a top-assembly
2. In 2014, parts/sub-assemblies can only be edited out of context – i.e you have to open them in their own window and make modifications as in-place edit is disabled.
3. 2015 has removed this limitation

Benefits
1. Faster open times
2. Large assembly files using express data uses significantly less memory, so don't have to have a high end machine with lots of RAM to open these
3. Express mode demands loads data only when necessary

Some trade-offs
1. Graphics Fidelity is slightly lower - when zoomed deep into some nut or bolt in the context of some very, very large assembly, some small parts e.g. some circles can show up as tessellated (not smooth)
2. Express mode is not available in Compatibility mode
3. Some addins/commands are entirely disabled due to incompatibility with express mode and therefore will work only in full mode
4. In 2014, we disabled quite a few commands because they were incompatible with express mode workflows
5. In 2015, we have re-enabled a whole bunch of commands to help complete common/main user workflows

File Size Considerations
1. The express data will indeed bloat the top level assembly or any assembly which is saved with express data
2. Users can strip off the express data by simply disabling the express mode in the application options PRIOR to opening the assembly and re-saving the assembly file.

3. This will get rid of the express data and restore the file back to its true size