

NX for Simulation: Product capabilities in NX 8

NX 8.0 for Simulation capability chart																		
Legend	NX CAE																NX Nastran 8.0	
	NX Advanced FEM	NX Advanced Simulation	Add-on products to NX Advanced FEM or Advanced Simulation												NX Design Simulation	NX Motion Simulation	NX Nastran Basic	NX Nastran Advanced
			NX Topology Optimization	NX Thermal	NX Advanced Thermal	NX Flow	NX Advanced Flow	NX Electronic Systems Cooling	NX Space Systems Thermal	NX Laminate Composites	NX Response Simulation	NX Durability Wizard	NX Advanced Durability	NX FE Model Correlation				
Preprocessing																		
Geometry import																		
Neutral geometry transfer (IGES, STEP, JT™, Parasolid)	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Direct geometry transfer (CATIA V4, CATIA V5, Pro/E)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Geometry modeling																		
Parasolid® geometry kernel	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Parametric solid and surface modeling	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Direct modeling with synchronous technology	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Feature modeling	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Assembly structure creation	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Interpart relationship	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Configurations	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#

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• Included in module																			
# Part of prerequisite for this package																			
+ Additional product required																			
Preprocessing (continued)																			
Geometry editing prior to meshing																			
Direct editing with synchronous technology	•	•	#	#	#	#	#	#	#	#	#	#	#	#				•	
Defeature tools (geometry repair, feature suppression, stitch surface, remove hole/fillet, partitioning)	•	•	#	#	#	#	#	#	#	#	#	#	#	#				•	
Nonmanifold topology generation for volumes	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Mid-surfacing (constant and variable thickness)	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Automatic topology abstraction	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Manual topology modification tools	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Create surface from mesh face	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Meshing and modeling																			
Beam modeling	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Automated bolt connection meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Automated shell meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
2D mapped meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Automated tetrahedral meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#				•	
Swept hexahedral meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Surface coating	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Transition meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Axi-symmetric meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Batch meshing	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Mesh quality checks	•	•	#	#	#	#	#	#	#	#	#	#	#	#				•	
Material property creation and management	•	•	#	#	#	#	#	#	#	#	#	#	#	#				•	
Mass property calculations	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Physical property creation and management	•	•	#	#	#	#	#	#	#	#	#	#	#	#				•	
Variable element thickness	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
Grouping	•	•	#	#	#	#	#	#	#	#	#	#	#	#					
FE assembly management	•	•	#	#	#	#	#	#	#	#	#	#	#	#					

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<ul style="list-style-type: none"> • Included in module # Part of prerequisite for this package + Additional product required 																		
Preprocessing (continued)																		
Boundary conditions																		
Apply on geometry	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Apply to local coordinate system	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Apply on FE entities	•	•	#	#	#	#	#	#	#	#	#	#	#	#				
Apply on groups	•	•	#	#	#	#	#	#	#	#	#	#	#	#				
Axi-symmetric boundary conditions	•	•	#	#	#	#	#	#	#	#	#	#	#	#				
Automatic contact detection and setup	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Automated load transfer from motion analysis	•	•	#	#	#	#	#	#	#	#	#	#	#	#				
External solver data deck support (import and export)																		
Abaqus	+	+																
ANSYS	+	+																
LS-Dyna	+	+																
MSC Nastran	+	•															•	
NX™ Nastran®	+	•															•	
NX I-deas™ (import only)	+	•																
Analysis model-to-design associativity																		
Automatic analysis model update based on geometry change	•	•	#	#	#	#	#	#	#	#	#	#	#	#	#	#	•	•
Postprocessing																		
Contour displays	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Beam cross-section contour displays	•	•	#	#	#	#	#	#	#	#	#	#	#	#				
Vector displays	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Isosurface displays	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Cutting planes	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Advanced lighting control	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Animations	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	
Complex dynamic response results	•	•	#	#	#	#	#	#	#	#	#	#	#	#				
Multiple viewports	•	•	#	#	#	#	#	#	#	#	#	#	#	#			•	

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Motion analysis																			
Kinematic simulation																	•		
Dynamic simulation																	•	+	+
Automatic assembly constraint conversion to motion joints																	•		
Association to part and assembly geometry																	•		
Joint couplers (gears, rack and pinion etc.)																	•		
Kinematic constraints																	•		
Motion drivers																	•		
Applied forces																	•		
Joint friction																	•		
Initial conditions																	•		
Spring/damper and bushings																	•		
2D and 3D body contact																	•		
General function operators																	•		
Driver control through articulation and spreadsheet																	•		
Static equilibrium																	•		
XY graph plotting																	•		
Design packaging tools																	•		
Capture assembly arrangements during animation																	•		
Multiple load case support																	•		
Integrated postprocessor																	•		
Load transfer to NX Advanced FEM/NX Advanced Simulation																	•		
Motion controls – co-simulation with Simulink or Matlab																	+		
Flexible bodies dynamic solution																	+		
Mutiple output formats (JT, VRML, animation movies, etc.)																	•		
Import Tecnomatix® Process Simulate Kinematics model																	•		

Additional notes

Characteristics of NX CAE

NX Advanced Simulation is a bundle that includes NX Advanced FEM and NX Nastran Desktop-Basic.

NX CAE add-on products require NX Advanced FEM or NX Advanced Simulation as a prerequisite.

Platforms supported – Windows (32 and 64-bit), Linux 64-bit.

Model and solution size is limited only by amount of memory available and hardware platform/OS.

Characteristics of NX Nastran Desktop

Solution initialized from CAE preprocessing environment (NX or Femap™ software) on the same system.

All solution definitions are performed in the preprocessing tool (either the preprocessor or as part of the Bulk Data Deck creation).

Solver execution is restricted to use with the same CPU as the FE preprocessing solution.

Model and solution size are limited only by amount of memory available and hardware platform/OS.

Platforms supported for NX Nastran Desktop – Windows (32 and 64-bit), Linux 64-bit.

The NX Nastran Basic bundle is a prerequisite for all add-on NX Nastran modules and the NX Nastran Advanced bundle.

The NX Nastran Advanced bundle is not available with Femap software.

DMP is not available in the NX Nastran Desktop version.

Characteristics of NX Nastran Enterprise

Solves any valid Nastran deck from any source (NX, Femap, MSC Patran, Altair HyperMesh and others).

Solver can be located on a different CPU from the preprocessing system, such as on a separate server or cluster.

Model and solution size is limited only by amount of memory available and hardware platform/OS.

Platforms supported for NX Nastran Enterprise – Windows (32 and 64-bit), Linux 64-bit, Unix.

The NX Nastran Basic bundle is a prerequisite for all add-on NX Nastran modules and the NX Nastran Advanced bundle.

The NX Nastran Advanced bundle is not available with Femap™ software.

One license of NX Nastran DMP can be used to spawn a solve over as many processors as wanted.

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