sgi®
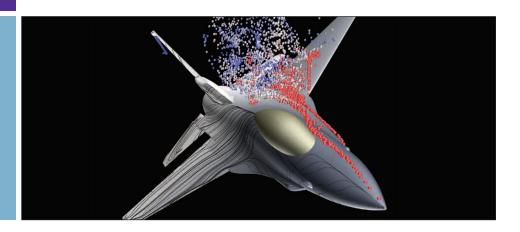
Application Brief

SGI® Visualization Solutions

Silicon Graphics Prism™ Visualization System and Intelligent Light FIELDVIEW:
Delivering Groundbreaking CFD Post-Processing and Visualization

The Silicon Graphics Prism™ family of visualization systems and FIELDVIEW or FIELDVIEW eXtreme from Intelligent Light create a world-leading solution for 64-bit computational fluid dynamics (CFD) post-processing and visualization. FIELDVIEW or the multipipe, immersive FIELDVIEW eXtreme with full FIELDVIEW functionality and Silicon Graphics Prism deliver a scalable solution for post-processing of large 64-bit data on a single shared-memory system platform. You should consider this solution for your organization if:

- You are visualizing large data and spending an inordinate amount of time decimating your data so that you can work with it and visualize it.

  or

- You are an SGI® Altix® user and are overwhelmed with the challenges of interpreting the large amount of data you generate.

  or

- You are a cluster user who is becoming increasingly aware of the challenges of programming a multinode system for large-scale visualization.

A Powerful, Scalable Team
FIELDVIEW and Silicon Graphics Prism help you manage your large-data CFD post-processing more effectively than ever before.

FIELDVIEW was created specifically for high-performance CFD and is used by top commercial manufacturing companies, high-level government agencies, and world-leading CFD authorities.

FIELDVIEW eXtreme is specifically created for SGI® Reality Center environments and performs well in smaller team room settings. All FIELDVIEW functionality is available through the familiar FIELDVIEW interface. The entire application interface, capability, and the user's work progress is retained throughout the CFD workflow.

FIELDVIEW products and Silicon Graphics Prism support advanced visualization and the automation of repetitive workflow steps. High-quality presentation rendering delivers better interpretation capability and adds important context to your models when you are presenting to people who are not domain experts.

Workflow benefits of Silicon Graphics Prism and FIELDVIEW include:

- Conduct high-performance analysis and interactive visualization on the same system

- Interactively visualize large or complex data without decomposing it first

- Collaborate interactively with remote users without moving data via Visual Area Networking (VAN)

- Leverage the system as a virtual resource by sharing it simultaneously with a number of users or allocating it to large-scale computation and visualization as needed

- Move seamlessly between engineering desktops with FIELDVIEW and team rooms or SGI Reality Center facilities with FIELDVIEW eXtreme

File Formats
FIELDVIEW (versions 10 and above) and FIELDVIEW eXtreme (versions 11 and above) are supported with Silicon Graphics Prism.

The software accepts the following commercial solver file formats with its direct readers:

- Plot3D
- Fluent, Fluent UNS, RAMPANT, FIDAP
- Phoenics
- CFX-4
- STAR-CD
- FLOW-3D
- NPARC/WIND
- FIELDVIEW
- Parallel FIELDVIEW (unstructured and structured)

Standalone translation to the FIELDVIEW format is available for these formats:
- BANFF
- CFD++
- CFX-TASCflow
- COBALT60
- PowerFlow
- FIRE

- GLACIER
- KIVA
- USM3D
- VECTIS

Export to the FIELDVIEW format is available from the following in-house and commercial solvers:
- AcuSolve
- CFD-ACE
- CFX-5
- COBALT
- FLUENT, FIDAP, POLYFLOW
- Fine Turbo
- FOAM
- GASP
- STAR
- Tetrex
- ThermoAnalytics

FIELDVIEW also allows you to create your own custom reader for proprietary formats.

Configuration Recommendations
Your ideal FIELDVIEW and Silicon Graphics Prism configuration will depend on your current data demands and workflow requirements. Silicon Graphics Prism systems are highly scalable so that you can increase your system capabilities as your requirements increase and it allows you to create very high-memory configurations to take advantage of the application's strengths. Based on best-of-breed industry-standard components with Linux®, Intel® Itanium® 2, and ATI® FireGL™ graphics, the systems can scale to 16 graphics pipelines, 256 processors, and up to 3TB memory.

Upgrading Your SGI Altix System
You can upgrade your existing SGI® Altix® 3000 system to include visualization with a Silicon Graphics Prism visualization module with the addition of a NUMAlink™ 4 router.

Deskside
The entry deskside configuration is 1 CPU, 1 GPU, scalable to 2 CPUs, 2 GPUs, and up to 24GB memory. For mul-

tipipe departmental viewing in a team room, pair Silicon Graphics Prism deskside with FIELDVIEW eXtreme.

Power System
A 4 CPU, 2 GPU Silicon Graphics Prism system with 24GB memory or more for local work is recommended for the CFD power user. This system is delivered in two rackmountable 2U modules.

Team System
A 6 CPU, 4 GPU Silicon Graphics Prism system teamed with a large display and FIELDVIEW eXtreme provides a shared resource for analysis of the big problems for up to six users. This configuration enables your team to collaborate in a highly productive team room or SGI® Reality Center environment where team members can work with all of their data in a high-performance, high-resolution environment. This single Silicon Graphics Prism system can simultaneously support multiple individuals, groups of people working together, and the HPC requirements of an entire organization.

Extreme System
The Extreme system with Visual Area Networking or VAN is designed for multi-user visualization both locally and remotely. The recommended configuration is 12 CPUs and 4 GPUs with OpenGL VizServer™ for VAN capabilities.

VAN helps revolutionize your workflow by providing networked collaboration between distributed individuals and groups with full multisite control of your 3D visualization results. VAN allows individuals (remote or local) a convenient on-demand way of accessing a powerful Silicon Graphics Prism system at their desktops. The system offers flexibility for use by individuals and teams for both their visualization and HPC requirements.

For more information:
See Silicon Graphics Prism at
www.sgi.com/products/visualization/prism.
See FIELDVIEW eXtreme at
www.ilight.com.