

CIGI Benchmarking (VBS-IG & FAST-IG): AEROPVS023

The CIGI Benchmarking (VBS-IG & FAST-IG) by VirtualSim project is a performance evaluation demonstrating how the simulation software vsTASKER acts as a simulation host using the Common Image Generator Interface (CIGI) protocol. It controls two external 3D visual frameworks: **VBS-IG** (by Bohemia Interactive Simulations) and **FAST-IG** (by Oktal-SE).

Core Architecture & Strategy

- **Decoupled Processing:** The simulation host (vsTASKER) runs on a separate computer from the Image Generator (IG) engines via Local Area Network (LAN).
- **Optimised Workflow:** Heavy 3D assets load into the graphics hardware once. The host then rapidly changes logic scenarios over the network without wasting time reloading graphic data.
- **Network Overhead Acceptance:** Socket communications introduce slightly more lag than direct memory sharing, but isolating the visual rendering frees up vital compute cycles for heavy tactical algorithms.

Benchmark Scenarios & Performance Limits

Image Generator (IG)	Test Scenario	Technical Dynamic
VBS-IG	300 entities (comprising tanks, infantry units, and aircraft).	entityCtrl network packets are delivered sequentially to the visual database at highly flexible runtime update rates.
FAST-IG	200 Pilatus aircraft executing formation and free-flight maneuvers.	Because FAST-IG lacks internal frame-smoothing tools, vsTASKER must pump positional updates at peak frame rates to prevent visual stuttering.

Advanced CIGI Integration Features in vsTASKER

- **Visual Scenario Design Mode:** Developers can link the vsTASKER GUI directly to a live IG screen during development to place and rotate terrain entities with instant 3D feedback.
- **Bespoke Messaging:** Standard CIGI packets can be seamlessly augmented with vendor-specific messages designed explicitly for the target platform.
- **Automated Terrain Scraping:** vsTASKER requests high-precision surface elevation packets from the IG's pre-loaded terrain assets. It then constructs an offline, cacheable height map database to compute local line-of-sight metrics without draining runtime GPU resources.

Are you planning to build a simulation project using **vsTASKER**, or do you need assistance configuring **CIGI packet rules** for a specific image generator?

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by VirtualSim

vsTASKER can use CIGI protocol to control an external Graphic Engine using message data packets.

As the two software (simulation and graphic engines) are often running on separate computers to optimize the resources, LAN is used for communication. Although sockets access is less efficient than direct memory access, the comfort of working with a remote engine (or a set a view channels) takes precedence over the bandwidth limitation. Decoupling the simulation from the visual output allow a complex scene with heavy models to be loaded once (whatever the time it takes) and the simulation engine to test various scenarios in a row very efficiently.

In the first demo, we are testing a scene with 300 entities (units, tanks and aircraft). vsTASKER (the host) is handling the flight dynamics and sending entityCtrl packet to the IG at various rates.

In the second demo, we are making 200 aircraft, Pilatus model, flying in formation then freely.

Fast-IG does not support smoothing, so, host must update aircraft positions at maximum frame rate to avoid jerks. This is not crucial for low speed entities but aircraft need high update rate.

Features:

- CIGI 3.3 specifications
- Use of CCL (sourceforge.net/projects/cigi/)
- vsTASKER v6 for the host
- VBS-IG for the IG (BiSimulation)
- FAST-IG 2017 for the IG
- Database courtesy of Oktal-SE



OS & HARDWARE SUPPORT	INDUSTRY APPLICATION

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