

OR CONCEPTS APPLIED

COMMERCIAL CATALOG

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OPUS: SOFTWARE FOR DYNAMIC REPLANNING

ORCA Planning and Utility System (OPUS)

The ORCA Planning and Utility System (OPUS) is software technology for military aircraft route planning and analysis. Core algorithms quickly generate goal-seeking, threat-avoiding, terrain-aware individual sortie routes as well as force level allocations for both strike missions and ISR missions. The OPUS Interactive product provides a wide range of graphical tools and map displays for multiple operating systems and hardware suites.

Build on It!

The OPUS Software Developers Kit (SDK) makes it possible to embed core OPUS autorouting, allocation, and analysis functions into other applications – both on the ground and in the air. The technology is mature as evidenced by being certified for operational B-2 flights in 1999 and endorsed by the Navy’s Advanced Technology Review Board in 2002. OPUS technology supports increasing spans of control by adding decision support tools for the ground station operator. The technology also supports onboard dynamic replanning.

Using the OPUS SDK can shorten your development schedule by weeks (or even months). If our extensive documentation isn’t enough, ORCA also has training classes to assist your developers to integrate existing methods into your software. Additional technical support can also be arranged. The OPUS SDK was designed for you to build on it.

Plan on It!

Accomplishing difficult objectives in dangerous environments is the essence of military missions. Planning is used to increase the likelihood of success. LO signatures, terrain effects, multiple weapon and sensor footprints, changing threat configurations, and changing sets of support assets make planning complicated and time-consuming. Using OPUS in the planning environment can save hours of painstaking detailed manipulations.

OPUS will generate flight feasible routes that take into consideration what pilots know is important. Analytical feedback and visualization tools are used to enhance situational awareness. As a decision support tool, OPUS provides more than a plan. OPUS also provides insights and alternatives. Involving users in the planning process is at least as important as the plan. OPUS was designed for people to plan on it.

Count on It!

It is often said that no plan survives contact with the enemy. Changes in the environment, the threat, the target, or even vehicle health and status conspire against the initial plan. Altering the plan is essential to maintaining effectiveness. Some events permit us to change our plans in a deliberate manner. Other changes (i.e. a newly discovered SAM) require an immediate reaction. OPUS generates solutions quickly enough to be very valuable for dynamic replanning.

In 2005, OPUS technology enabled two X-45A unmanned aircraft to successfully complete graduation exercises in test flights 63 and 64. When confronted with a “pop-up” threat, OPUS was used to dynamically and autonomously generate new threat avoiding routes and reallocate sensors and weapons to attack the new threat as well as previously assigned targets. In difficult and time constrained situations, OPUS was designed and tested to allow you to count on it.



OPUS Interactive (OPUSi): OPUS, the ORCA Planning and Utility System, is an interactive mission planning and analysis system that has been used both operationally and in analytical applications. Through user interaction, the user can define weapon footprints, sensor coverage envelopes, aspect dependent signature information, and locations for threats and targets. Core algorithms quickly generate goal-seeking, threat-avoiding, terrain-aware individual sortie routes as well as force level plans for both strike missions and ISR missions. The speed and fidelity of these algorithms has made OPUS useful to both analysts and operators. OPUS can be used to parse Air Tasking Orders (ATOs) and Airspace Control Orders (ACOs).

Data-driven models and algorithms provide the flexibility to examine a range of potential LRS platforms. OPUS is a state of the art tool for modeling LO aircraft and the integrated air defense systems that they confront. Capabilities exist for assigning multiple aircraft to a set of objectives, optimizing individual aircraft sorties, autorouting for air-to-surface attacks, and developing new plans while in flight. The OPUS tool can be used to generate *best use of force* routes as input to mission campaign level analyses.

Catalog Number: PC/Linux: OPUS20-SL



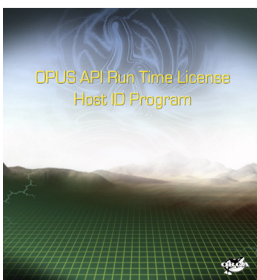
OPUS Software Developers Kit (SDK): The OPUS Software Developers Kit (SDK) includes the Application Programmers Interface (API), Examples, Documentation, and one API Run Time license. The SDK license gives the user the right to build new applications that reference OPUS functions and to run the application. The API is a set of C++ software libraries and header files designed to access OPUS functions without use of the OPUS Graphical User Interface (GUI). The SDK includes an example program that exercises OPUS services using commands from an XML script.

Catalog Numbers: PC: OPUS40-SL; Linux: OPUS41-SL



OPUS Data Preparation System (DPS): The OPUS Data Preparation System (DPS) provides data preparation services that can be used for both OPUS Interactive and OPUS API. The Data Preparation System can be used for characterizing vehicle performance from Digital Terrain Elevation Data (DTED) for terrain profiling, vehicle threat template definition, and characterization of weapon/sensor footprints.

Catalog Number: PC/Linux: OPUS30-SL



OPUS API Run Time (RL): The OPUS API Run Time License is applicable only to non-ORCA developed software applications that make use of the OPUS API. The OPUS API Run Time License gives the user the right to use the product on a single machine, with a single software application that references OPUS functions. The API is a software developer's application consisting of software libraries and interfaces designed to access OPUS functions without use of the OPUS Graphical User Interface (GUI). An example is the OPUS Script Processor, which reads commands from a text file, develops instructions, and executes these instructions through the OPUS API.

Catalog Numbers: PC: OPUS50-RL; Linux: OPUS51-RL

OPUS Discount Pricing Plans

ORCA Enterprise Agreement

In addition to the standard retail channel of distribution, ORCA offers to license its products through a volume-purchasing program called Enterprise Agreement (EA). The Enterprise Agreement is an easy and affordable way for customers to standardize their software used across the enterprise. The Enterprise Agreement offers discounts that increase as dollar volumes increase, easy order fulfillment, and other benefits. Under ORCA’s Enterprise Agreement, discounted prices are based on the committed dollar amount of software purchased. Prices on subsequent orders to meet the commitment will apply to orders within the same product pool throughout the Enterprise Agreement two-year term.

For dollar volume purchases under the Enterprise Agreement (EA) for OPUSi (Interactive) and OPUS Software Developers Kit (SDK) products only, ORCA offers the following discount schedule:

Volume Purchase	Discount
\$50,000 - \$99,999.99	10%
\$100,000 - \$199,999.99	20%
\$200,000 - \$399,999.99	30%
\$400,000 - \$799,999.99	40%
\$800,000 & Above	50%

For dollar volume purchases under the Enterprise Agreement (EA) for OPUS Data Preparation System (DPS) products and for the OPUS Application Programmers Interface (API) Run Time License products only, ORCA offers the following discount schedule:

Volume Purchase	Discount
\$100,000 - \$199,999.99	10%
\$200,000 - \$399,999.99	20%
\$400,000 - \$599,999.99	30%
\$600,000 - \$899,999.99	40%
\$900,000 & Above	50%

OPUS Companion License (CSL)

Instead of the Volume Discounts listed above, the OPUS Companion License (CSL) purchasing plan allows customers to receive an additional discount from the original combined catalog prices of OPUSi (Interactive) and the OPUS Software Developers Kit (SDK) licenses by ordering them as a set and purchasing them together.

OPUS Companion License (CSL)		
Item	Catalog Number	Catalog Price
OPUSi (Interactive)-PC/Linux and one of the following:	OPUS20XX-CSL	\$20,000.00
OPUS SDK-PC	OPUS2040-CSL	
OPUS SDK-Linux	OPUS2041-CSL	

All prices and items listed in this catalog are subject to change without notice.

OPUS Products and Pricing

Information Technology Software	Maintenance Software
• OPUS Interactive Software (OPUSi)	• OPUS Advantage (OA) Software Maintenance Plan
• OPUS Data Preparation System (DPS)	• Upgrade Licenses (UL)
• OPUS Software Developers Kit (SDK)	Training Classes
• OPUS API Run Time (RL)	• OPUSi (Interactive) Users Course
Available Formats: PC, and Linux	• OPUS Software Developer's Course

Information Technology Software

Standard Licenses (SL) / Enterprise Agreement (EA)

Standard Licenses are for a single installation, and can be purchased for the following OPUS products: OPUSi (Interactive), OPUS DPS (Data Preparation System), and OPUS SDK (Software Developers Kit).

OPUSi is the ORCA Planning and Utility System that is an interactive mission planning and analysis system. The OPUS DPS provides data preparation systems that can be used for both OPUSi and the OPUS SDK. The OPUS SDK includes the Application Programmers Interface (API). It gives the user the right to build new applications that reference OPUS functions and to run those applications. The SDK includes one Run Time License for OPUS API products.

Standard Licenses (SL) / Enterprise Agreement (SL-EA)			
Item	Catalog Number	Catalog Number Enterprise Agreement	Catalog Price
OPUSi (Interactive)-PC/Linux	OPUS20-SL	OPUS20-SL-EA	\$15,000.00
OPUS DPS-PC/Linux	OPUS30-SL	OPUS30-SL-EA	\$2,500.00
OPUS SDK-PC	OPUS40-SL	OPUS40-SL-EA	\$10,000.00
OPUS SDK-Linux	OPUS41-SL	OPUS41-SL-EA	\$10,000.00

Standard Licenses provide the right to use the OPUS purchased version service packs. Included is a CD-ROM with executable, online help, and tutorials. E-mail and telephone support up to eight hours within a one-year period is also included.

OPUS API Run Time License (RL)

The OPUS API Run Time License is applicable only to non-ORCA developed software applications that make use of the OPUS API. The OPUS API Run Time License gives the user the right to use the product on a single machine, with a single software application that references OPUS functions.

API Run Time License (RL) / Enterprise Agreement (RL-EA)			
Item	Catalog Number	Catalog Number Enterprise Agreement	Catalog Price
OPUS API-PC	OPUS50-RL	OPUS50-RL-EA	\$5,000.00
OPUS API-Linux	OPUS51-RL	OPUS51-RL-EA	\$5,000.00

Maintenance Software

Upgrade Licenses (UL) / Enterprise Agreement (EA)

After one year and within three years of the original purchase, Upgrade Licenses are available at 40% of the list price.

Upgrade Licenses (UL) / Enterprise Agreement (UL-EA)			
Item	Catalog Number	Catalog Number Enterprise Agreement	Catalog Price
OPUSi (Interactive)-PC/Linux	OPUS20-UL	OPUS20-UL-EA	\$6,000.00
OPUS DPS-PC/Linux	OPUS30-UL	OPUS30-UL-EA	\$1,000.00
OPUS SDK-PC	OPUS40-UL	OPUS40-UL-EA	\$4,000.00
OPUS SDK-Linux	OPUS41-UL	OPUS41-UL-EA	\$4,000.00

OPUS Advantage (OA) / Enterprise Agreement (EA)

If the customer desires, they can lock-in their software investment strategy at a greatly reduced cost by participating in our OPUS Advantage plan. This is an alternative purchasing plan that provides customers with the ongoing privilege to install the latest version of a particular software product, at no additional charge, as soon as it is available during their licensing agreement term (two years from date of original purchase). For a one-time fixed fee of 20% of the original purchase price for all software, paid at the time of the original purchase, will entitle the customer to all new version upgrades or Service Pack Updates released within the two (2) year plan term beginning at the original purchase date.

OPUS Advantage (OA) / Enterprise Agreement (OA-EA)			
Item	Catalog Number	Catalog Number Enterprise Agreement	Catalog Price
OPUSi (Interactive)-PC/Linux	OPUS20-OA	OPUS20-OA-EA	\$18,000.00
OPUS DPS-PC/Linux	OPUS30-OA	OPUS30-OA-EA	\$3,000.00
OPUS SDK-PC	OPUS40-OA	OPUS40-OA-EA	\$12,000.00
OPUS SDK-Linux	OPUS41-OA	OPUS41-OA-EA	\$12,000.00

Training Classes

OPUS Training Courses

ORCA offers two training courses they are, the OPUS Interactive Users Course and the OPUS Software Developer's Course. Prices shown are Net Prices and are due 30-Days from receipt of invoice. Catalog price is per attendee, and each course provides 2 days of student instruction. Class size at off site facility is limited to eight students. The off site facility provides IT equipment for student instruction and computer presentation capability for the instructor.

OPUS Training Courses (TC)		
Course Description	Catalog Number	Catalog Price
OPUSi (Interactive) Users Course		
ORCA Site	OPUS20-TCO	\$1,500.00
Off Site	OPUS20-TCOS	\$10,000.00
OPUS Software Developer's Course		
ORCA Site	OPUS40-TCO	\$1,500.00

OPUS Technical Support

Technical support is available for products via our web site located on: <http://www.ORConceptsApplied.com>

Technical phone support is available from 9:00 AM to 5:00 PM PST Monday through Friday, (562) 907-6700, x62. Written user operation documentation is available in HTML help files provided with the software.

OPUS System Requirements

The computer system software and hardware configurations are primarily driven by the requirements specified to run the system OS. The system requirements for OPUS are delineated according to operating system.

Microsoft Windows Workstation:

Minimum System Requirements:

- Pentium® 3
- 933 MHz or comparable processor
- 512 MB RAM (OPUS Interactive)
- 450 MB free hard disk space (Typical Installation)
- CD ROM
- VGA or higher resolution
- Windows 2000

Recommended System Configuration beyond that of above:

- Pentium® 4
- 1.8 GHz or better comparable processor
- 1 GB of RAM
- 600 MB free hard disk space (Full Installation)
- Windows XP Operating System

Linux PC:

- OS: Red Hat Linux 7.1 or higher
- Memory: Same as OPUS Interactive on PC.
- Disk: Same as OPUS Interactive on PC.
- Processor: Same as OPUS Interactive on PC.

Other Operating Systems:

- Ask us.
- Prices may vary.

ORCA also recommends dual monitors although it is not required.

