



C2PC

COMMAND AND CONTROL PERSONAL COMPUTER

Command and Control Personal Computer (C2PC) is Northrop Grumman's widely-deployed, Microsoft Windows-based Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) software suite (Gateway, Client, Web Application). C2PC consolidates tactical information from a variety of sensors and sources into a Common Operational Picture (COP) that can be viewed by military commanders in different locations using different hardware platforms. C2PC provides exceptional geographic map and imagery display, live tracking of friendly and hostile forces, tactical graphics, route management, messaging services, automated tactical alerts, and an interactive web client that works with any web browsers supporting WebGL. C2PC versatility enables it to be optimized for a wide range of operational environments, from national command centers, to tactical combat operations centers, to vehicles, to dismounted squad operations. Its integrated communications system is highly efficient and enables effective operation in Disconnected, Intermittent, and Limited (DIL) low bandwidth environments. C2PC Gateways and Clients employ a highly efficient and flexible data exchange protocol that supports unicast, subnet directed broadcast, and multicast communications. C2PC also provides an open software foundation by providing a software development kit for building or integrating with other systems.

Supported Tactical Data

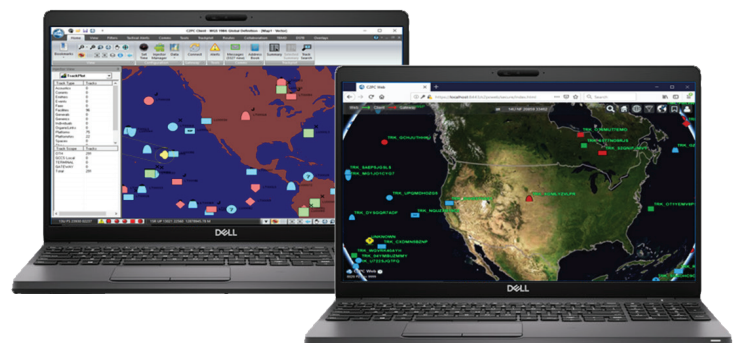
- Tracks
- Overlays
- Routes
- Address Book
- VMF Messages

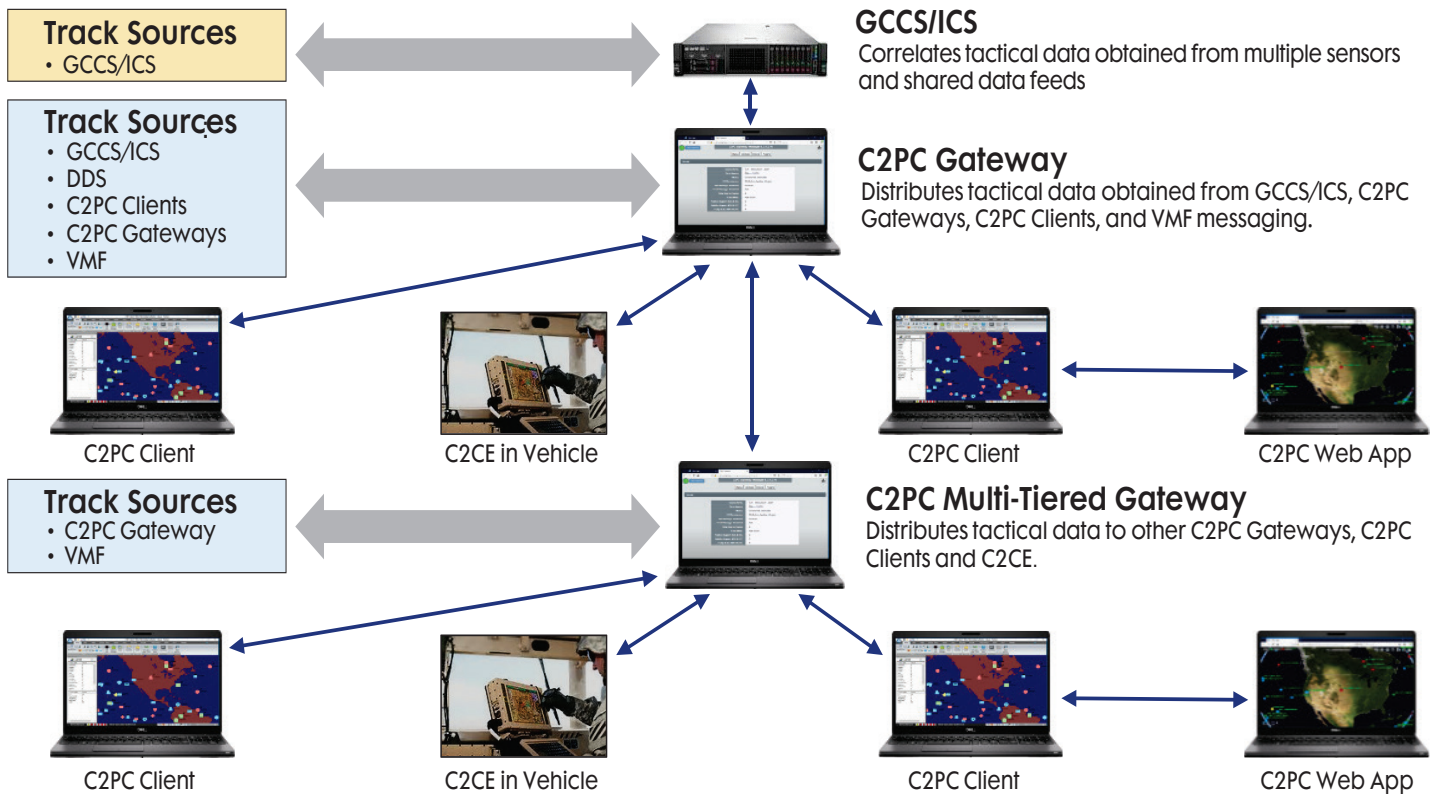
Client and Gateway System Requirements

- Supported Operating Systems
 - Windows® 7, 8, 10
 - Windows Server 2008, 2008 R2, 2012, 2012 R2, 2016, 2019
 - Secure Host Baseline (SHB)
- 4 GB Random Access Memory (RAM)
- 120 GB disk space storage (solid state drives recommended)

Web Client System Requirements

- Web Browser supporting WebGL
 - Mozilla Firefox
 - Google Chrome
 - Microsoft Edge





C2PC Gateway

Features

C2PC Gateway connects to a variety of coalition, U.S., and national data sources to exchange and synchronize tactical data with C2PC Clients and Web Clients. C2PC Gateway synchronizes tracks and overlays with enterprise servers that correlate data from multiple sources into a consolidated Common Operational Picture (COP). If the network connection to the enterprise servers is disrupted, C2PC Gateway automatically takes over track correlation responsibilities and maintains the COP until communications are reestablished. C2PC Gateway also provides configuration options to minimize data exchange over low bandwidth networks by controlling the number of network packets per second and limiting the geographic area supported. Hierarchical Gateway architecture:

- Enables a synchronized COP below break points
- Sets up geographic filters to only distribute tracks within specific regions
- Assumes correlation responsibilities when disconnected from the next highest tier Messaging Services
- Has Support for 512 C2PC Client connections

Interoperability with Enterprise Servers

- US Global Command and Control System (GCCS) servers and Interoperable C4I Services (ICS) – synchronize track and overlay data with any fielded version of GCCS
- C2PC Gateways – synchronize tracks, overlays, routes, and address book data

Data Distribution

- Efficient data distribution via subnet directed broadcast and IP multicast
- UDP unicast for targeted distribution
- Encrypted data exchange between C2PC Clients and Gateways over secure sockets
- Transmits COP as MIL-STD-6017/A/A+/B/C/C+ VMF messages
- Cloud based server for tracks, overlays, routes, and address book data
- Allows operators to switch between different Enterprise Servers
- Obtains tracks from enterprise server and distributes as VMF messages

Web-based Controls

- Cyber secure authentication for activation or configuration
- Web-based configuration from anywhere on the network
- Web-based dashboard provides a quick view of operational status

C2PC Client

Features

C2PC Client application provides a user interface capable of displaying common military map formats with tactical graphics adhering to current military symbology standards. The client comes with many graphical tools to aid the operator in visualizing the battlefield, while providing numerous logistics tools to make informed mission critical decisions.

Geographic Display Services

- Displays most common military map and imagery formats
- Provides multiple simultaneous maps
- MIL-STD-2525C military symbology and graphics
- Whiteboard overlay collaboration across the network
- Free hand drawing optimized for touch displays
- Symbol de-clutter and aggregation to organize COP display
- Data exchange between Clients via VMF messaging in DIL networks
- Synchronizes tactical data automatically if connected to C2PC Gateway
- Pre-filled forms for quick message creation and transmission
- E-mail style message addressing
- Communications monitoring to show transmission activity between units
- MIL-STD-2045-47001C/D file and message exchange
- Variable Message Format (VMF) MIL-STD-6017/A/A+/B/C/C+
- Self-Descriptive Situational Awareness Message (SDSA) exchange

Planning Tools

- Easy to use drawing tools to create complex overlays and routes
- Assign boundary cross alerts to overlay lines and areas
- Overlay time simulation
- Assign tracks to routes and monitor progress or course deviations
- Graphically steer to indicators to follow route using GPS assisted navigation

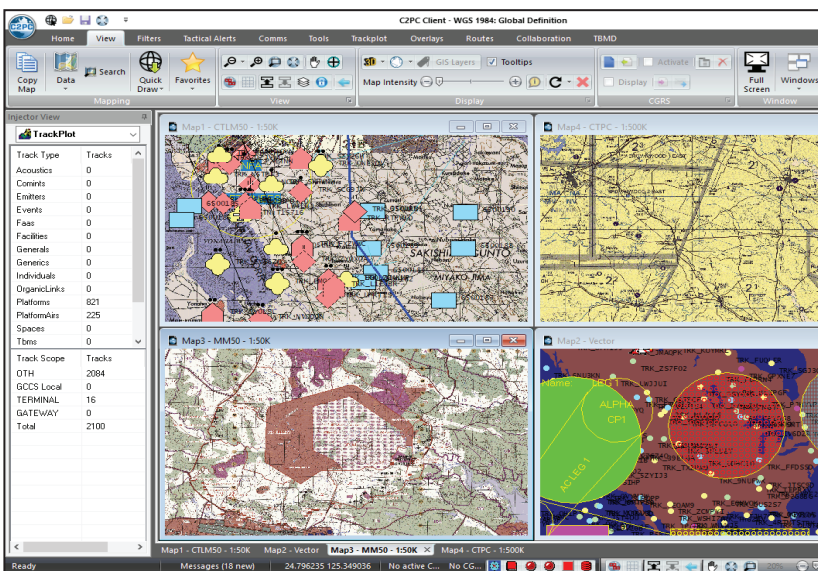
Map Tools

- Range/Bearing to measure distance and bearing between two points
- Range to measure distance along a curved line
- Change location units with double click (MGRS, Latitude/Longitude, UTM, Decimal Degrees)

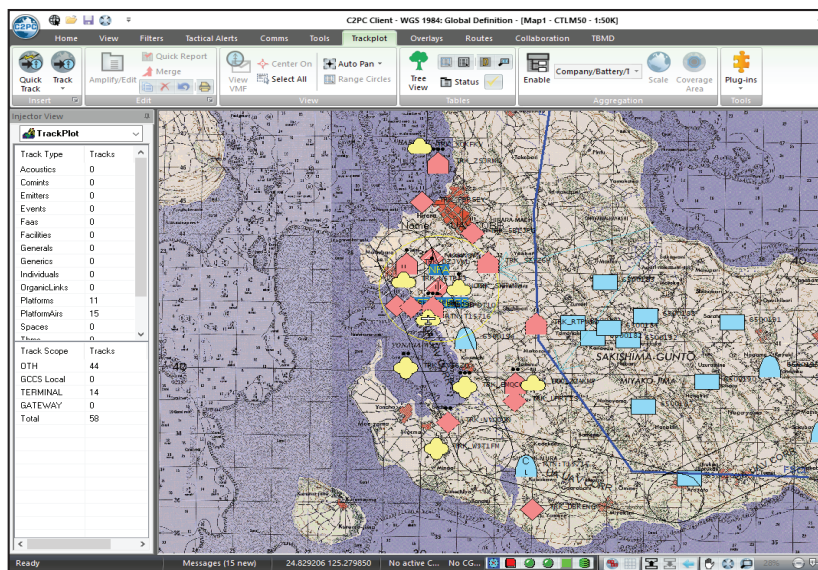
Benefits to Warfighter

- Geospatial awareness of battlespace in near real-time, blending digital maps, graphics, planning, and alerts

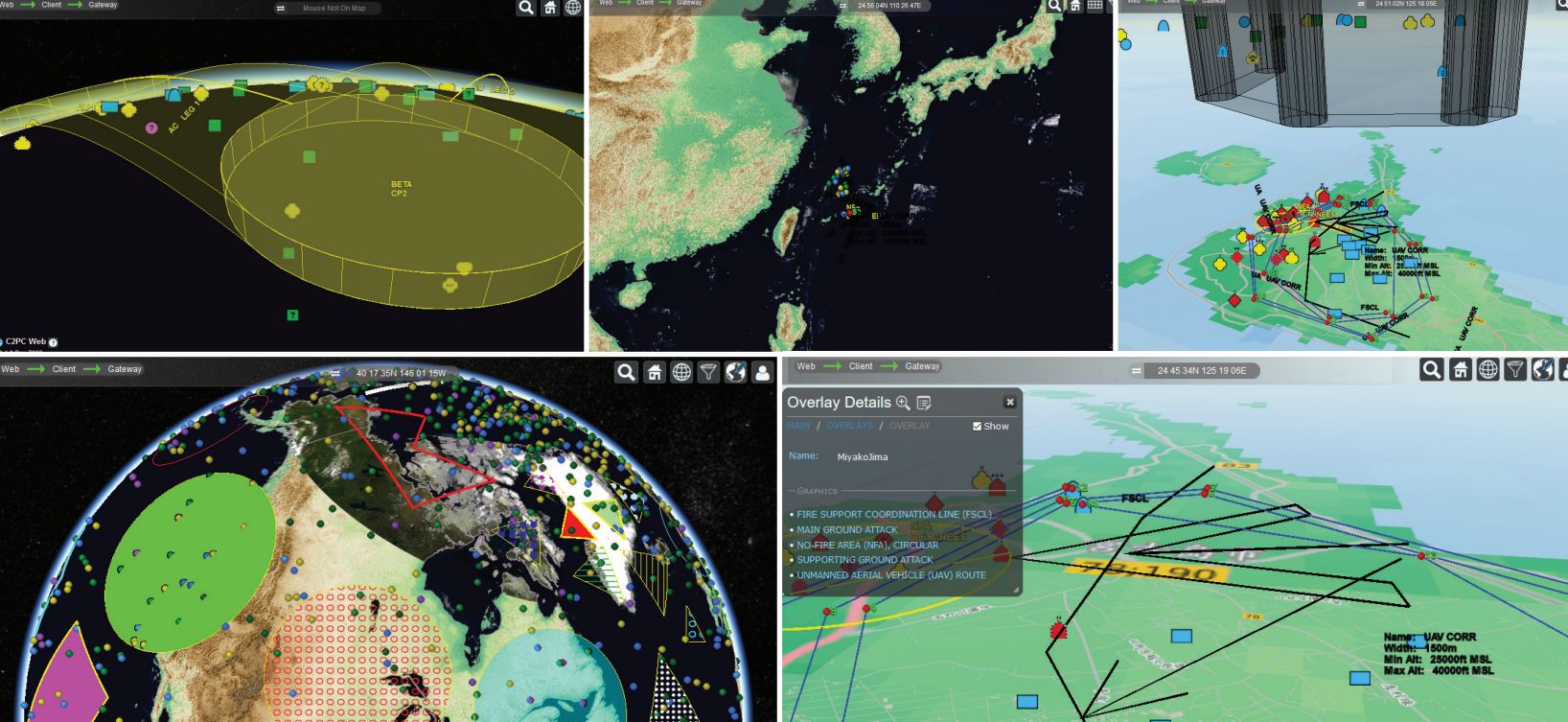
- Automated monitoring of tactical elements with visual and audible alerts
- Exchange fire control, situational awareness, and combat support messages
- Interoperability with major coalition forces
- Enables third-party development and integration of application extensions



C2PC Client view showing 4 map views open with different map layers. Also in the view are Track symbols showing the current situational awareness and the different Overlay graphics available. Similar graphics can be viewed below on C2PC web.



C2PC Client view showing map data, overlays and routes demonstrating a COP view containing the Miyako-jima Island in Japan. Similar graphics can be viewed below on C2PC web.



C2PC Web Application

Features

C2PC Web Application enables web browsers to interact with the Common Operational Picture (COP). Command staff organizations can each view separate web instances tailored to meet their operational needs. Each 2D or 3D map view shows the live tracks, overlays, and routes needed for planning and monitoring operations. C2PC Web doesn't require any browser plugins or special software installed on the host computer. It doesn't store tactical data on the host computer and eliminates Cyber Security vulnerabilities associated with protecting Data at Rest (DAR). C2PC Web can connect to AGI Content servers to display tracks, overlays, and routes geo-referenced through 3D terrain and buildings. C2PC Web uses the latest WebGL technology to provide unmatched performance and responsiveness.

Geographic Display Services

- 2D & 3D map and imagery display
- Intuitive map controls to panning, zooming, and tilting map views

Common Operational Picture (COP) Display

- Shows MIL-STD-2525C symbols representing friendly, hostile, neutral, and unknown contacts correctly geo-referenced over maps or imagery
- Robust set of overlay graphics drawing tools that support MIL-STD-2525C military symbols, tactical points, tactical lines, and tactical areas
- Full track, overlay and route add, edit and delete tools

C2PC Web Application browser views show a 3D world view including overlays, 3D Air Corridors, routes, tracks. WMS map layers are also active. The maps display tracks with altitudes in a 3D perspective as well. There is a similar view of the Miyako-jima Island in Japan complementing the COP display above from C2PC Client.

Planning Tools

- Rapidly create complex routes and overlays with easy to use drawing tools

Map Tools

- Range/Bearing measures distance and bearing between two points
- Range measures distance along a curved line
- Multiple units of measure (MGRS, Latitude/Longitude, UTM, decimal degrees) via click

Benefits to Warfighter

- View Common Operational Picture on any device with a web browser
- Cyber secure TLS Version 1.2 communications
- Highly responsive map and graphics display, even under heavy load
- Seamless interoperability with C2PC Client

For more information, please contact:

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