CHCNAV

CGBAS

GROUND BASED AUGMENTATION SYSTEM

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SURVEYING
& ENGINEERING

ADVANCED HIGH-PRECISION POSITIONING SERVICE PLATFORM

CGBAS is an advanced high-precision service platform in the field of geospatial information to control and manage regional, national and wide-range GNSS CORS services. CGBAS utilizes independently developed advanced algorithms to establish models for solving ionospheric delay, tropospheric delay, orbit errors, and other parameters. CGBAS also These models are used to provide optimized spatial error corrections for end-users, thereby delivering correction services with increased reliability and higher precision. Due to the standard Ntrip TCP/IP broadcast protocol and various levels of differential correction services, CGBAS can serve various industries such as surveying and engineering, GIS, precision agriculture, intelligent transportation, autonomous driving, etc.

FULL-GNSS POSITIONING SERVICES

Full GNSS support and multiple brands access

CGBAS integrates all GNSS constellations -GPS, GLONASS, Galileo, BeiDou and QZSS- to provide ultimate full-GNSS RTK positioning services to users. CGBAS supports processing and broadcasting of the new generation Beidou signals, sustaining high accuracy across diverse terrains. CGBAS supports the capability for joint data processing of various satellite systems as well as the ability to freely combine data from different systems for processing. Additionally, it is compatible with terminals adhering to industry-standard specifications from multiple brands.

PACKED WITH FEATURES, READY FOR INSTANT USE

All functions integrated in CGBAS system

CGBAS integrates modules for station management, data processing, correction broadcasting, user management, coordinate system management, and online maps. In addition to real-time data services, CGBAS also offers post-processing capabilities by access to the Rinex and virtual Rinex engine.

FLEXIBLE DEPLOYMENT SOLUTIONS & COMPATIBILITY

Appropriate deployment solutions based on user requirements

CGBAS supports both distributed and single-machine deployment. Users can choose the appropriate deployment solution based on the number of base stations and terminal connections. With horizontal scaling, it is allowed for expansion to higher specifications without affecting the system operation. In addition to supporting Windows OS, CGBAS also supports Linux OS and is fully compatible with mainstream cloud servers, offering users more choices when selecting servers.

ADVANCED ALGORITHMS ENSURE ACCURAVY AND STABILITY

Unique modeling and quality control algorithms

CGBAS utilizes proprietary modeling algorithms for the ionosphere and troposphere delay. These algorithms are trained and fitted based on extensive observation data spanning tens of thousands of hours. By establishing separate models for each region, CGBAS enhances the accuracy of modeling interpolation. Implementing quality checks and monitoring in data quality, baseline processing, ambiguity resolution in triangulated baseline networks, and ionospheric interpolation, CGBAS enhances the accuracy and stability of its broadcast VRS and grid correction services.

HIGH AVAILABILITY, HIGH CONCURRENCY

The system is capable to run continuously and stably 24/7.

CGBAS implements backup and load balancing solutions to achieve high availability up to 99.9% and handle high loads. The backup functionality of CGBAS includes redundant backup, off-site dual backup, node self-healing, and automatic failover, minimizing the impact of server node failures. The microservices architecture allows CGBAS to handle over 5000+ base reference stations and 100K+ concurrent users.

VISUAL MONITORING AND VISUALIZATION FOR ENHANCED OVERSIGHT

Real-time monitoring of service status for streamlined operations and maintenance.

Quality check analysis, online map and visual report statistics enable monitoring of data quality at base stations and effectiveness of terminal services. Alarm function promptly notifies of any abnormal system or base station statuses, enhancing operational timeliness and reducing operational pressures. When used with CHCNAV's P5 GNSS receivers, CGBAS will provide monitoring of physical states such as site networks and temperature, as well as remote control and configuration upgrade capabilities for base stations.

EXCELLENT PERFORMANCE PAIR WITH CHCNAV BASE AND TERMINAL

Enhance with customized data interaction for the best performance experience.

CHCNAV integrates auxiliary functions between the P5 Reference station, CGBAS software, and CHCNAV terminals. In addition to real-time monitoring of the base station status, CGBAS software also enables batch restart, upgrade, and configure receivers even when the base station lacks a public IP. CGBAS software broadcasts auxiliary positioning data to the terminal through custom messages to enhance the terminal's positioning accuracy and performance.

A SECURITY-FOCUSED SOLUTION

A secure design approach encompassing both data and network aspects.

The system interface of CGBAS is web-based, enabling access from anywhere without remote access. CGBAS ensures data and network security by isolating internal and public networks and employing custom compression formats for one-way data transmission. Additionally, for added security, CGBAS supports coordinate offset functionality to prevent base station coordinate leakage.

SPECIFICATIONS

System recommendations

Operating system	Microsoft Windows 7 or higher (64-bit) Microsoft Windows server 2012 or higher (64-bit) RedHat Linux: CentOS 7 or higher, Red Hat Enterprise Linux 7 or higher Debian Linux: Ubuntu 16 or higher
Database	MySQL 5.7 or higher, PosgreSQL

Hardware [1]

Up to 50 stations & 2,000 concurrent users	1 x Server with 8 Cores, 16 GB RAM, 500 GB Hard disk (Minimum)
Up to 300 stations & 10,000 concurrent users	2 x Server with 8 Cores, 16 GB RAM, 500 GB Hard disk (Minimum)
Up to 600 stations & 20,000 concurrent users	3 x Server with 8 Cores, 16 GB RAM, 500 GB Hard disk (Minimum)
Up to 1,000 stations & 50,000 concurrent users	4 x Server with 8 Cores, 16 GB RAM, 500 GB Hard disk (Minimum)

Recommend browser

Microsoft Internet Explorer 11 or higher
EDGE
Google Chrome
Firefox
Safari

System capacity

GPS	L1, L2, L5
GLONASS	L1, L2
Galileo	E1, E5a, E5b, E5 AltBOC, E6
Beidou	B1I, B2I, B3I, B1C, B2a, B2b
QZSS	L1, L2, L5
Load	Up to 10,000 base station connection & 1,000,000 concurrent users connection
Availability	>99.99% [2]
Baseline length	<150 km
Positioning mode	VRS, VRS Grid, Single station, RTD

Communication

Data access	Protocol: Ntrip, TCP/IP, UDP, Support TLS Formats: RTCM3.X, RT17/RT27, Unicore
Data formats	RTCM3.0, RTCM3.2 MSM3-MSM7, Support customized message Rinex3.02, Rinex3.04, support compact Rinex format
Data storage	Local Disk, FTP push

Security

Data isolation	Separate deployment of processing and broadcasting, with data pushed unidirectionally
System access	Authentication, access control

Function

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Station management	Display detailed satellite status, Latency and SNR information
	Realtime QC for base station data
	Support remote control to base station without public IP
	Support batch restarting, upgrading and configuring of receivers [3]
	Realtime physical status: CPU temperature, Operation temperature, Network status, Battery capacity, Power type, Firmware version
	Support Meteorological data
Engine	Support load balancing & backup
Post-processing service	Genarate Rinex data and ephemeris data for specified period Generate virtual Rinex data for specified locations [4]
Online map	Station status, baseline status, user status
Electric fence	Support specific Lat/Lon range, support electric fence with specific region
User management	Role management, account management
Disaster monitoring [5]	Surface displacement monitoring with Post-processing engine and RTK engine

Monitoring

Alarm	Station status, base reference station displacement [6], user status, service status, event status
Atmospheric monitoring	Ionospheric space state, Tropospheric space state
System Monitoring	Server resource monitoring, Service performance monitoring

*Specifications are subject to change without notice.

(1)The listed specifications are the minimum hardware requirements. Backup and load balancing are not included. For higher performance, please consider a more advanced configuration. (2) An availability of 99.99% is achieved under conditions of redundancy backup and load balancing. (3) Remote control and config function only compatible with CHCNAV P5 series GNSS receivers. (4)Virtual Rinex function will be provided through future software version upgrade. (5)The Disaster monitoring module is not included as a standard feature and requires an additional license to activate this functionality. (6)The base station displacement monitoring will be provided through future software version upgrade.
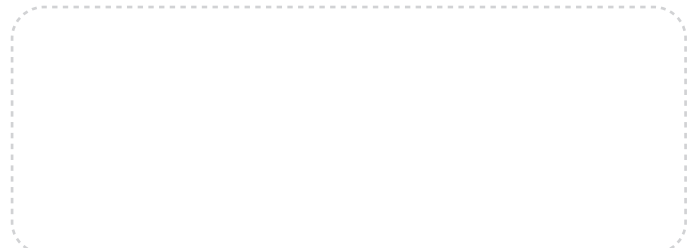
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