

The Fundamentals of the Guidewire Cloud Platform



Twenty years ago, P&C insurers faced a major technological challenge—moving off of mainframes and homegrown legacy systems—in order to deliver on their business imperatives. To successfully seize on this new technology, they turned to Guidewire as the leader in enterprise software for the P&C industry.

We built a system using the modern technology of the time. However, a few years ago it became clear we had reached the next generational shift in delivering enterprise software. Other industries were widely adopting cloud technology and revolutionizing approaches to distribution channels, pricing models, and personalization. We recognized that this move to the cloud would unlock incredible value for our customers, and we were determined to join with them in this transition.

The cloud gives insurers technology that is simpler to manage, easier to upgrade, and a catalyst for innovation. This ebook details how we've uniquely designed our cloud model and the key components that make our customers successful. Learn more about how we approach security, scalability, observability, updateability, and integration. These components come together in the Guidewire Cloud Platform (GWCP), the engine that powers P&C insurance innovation.

What is the Guidewire Cloud Platform?

The Guidewire Cloud Platform (GWCP) is the technical architecture that powers Guidewire’s applications in the cloud.

GWCP provides insurers with the tools they need to develop, provision, deploy, and run Guidewire applications. For our customers, this increases business agility to drive profitable growth, accelerates development, and reduces IT complexity. This extends to digital, data, and analytics applications. Moreover, the underlying architecture of GWCP is grounded in best practices learned from successfully delivering P&C solutions over the last two decades.

It uses a hybrid cloud tenancy model where the InsuranceSuite core is deployed in single-tenant instances for each customer. This is complemented by multi-tenant cloud services (rating, quoting, rules, product models, etc.) that provide essential P&C functional capabilities, and those capabilities can be shared by many customers. The architecture ensures each customer’s core data is maintained in a single tenancy, while still making the data available to use within the hybrid tenancy GWCP ecosystem. This design ensures security, scalability, and performance. In tandem, these single tenant core applications interact with multi-tenant cloud services to fulfill functional needs, optimize resource utilization, and minimize cost. This ebook demonstrates how the platform takes care of infrastructure requirements so that the development-to-deployment lifecycle is optimized and effortless.

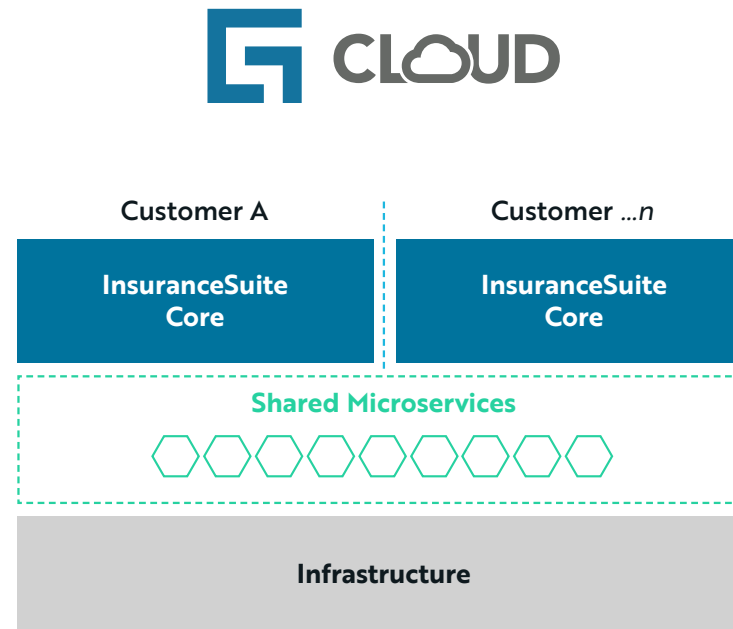


Fig 1: Guidewire Cloud Hybrid Architecture



Security

The Guidewire Cloud Platform (GWCP) is a central piece of Guidewire's comprehensive approach to security and data privacy in the cloud.

Our customers are faced with an increasingly volatile cybersecurity environment, along with more and more scrutiny both from regulators and within their organizations. This has forced some of our self-managed customers to bear additional financial burden and expand their security efforts and staffing.

With GWCP, standardized cloud infrastructure and a centralized Information Security Center of Excellence elevate each insurer's security posture. The result is that cloud customers transfer the risk and complexity of managing ever-evolving security threats to Guidewire, and we deploy both technological and operational measures to address these threats.

The single tenant component of GWCP's hybrid model provides an isolated environment that contains insurer proprietary core process flows and datastores. Further, all backend systems and customer data are placed inside a private-facing subnet with no access to the public internet. Network traffic in and out of this virtual private cloud is controlled by security groups and closely monitored by the Guidewire Operations team. Datastores for single tenant core applications are isolated from the datastores of other tenants in production. As an additional security layer, production and non-production environments are deployed to different Kubernetes clusters to maintain the security of the production environment.

At Guidewire security operates not only at a technical level, but also operationally by implementing controls throughout every team and process. As a result, GWCP has attained industry standard best-practice compliance audits, including:

SOC 1

A report on controls relating to financial reporting.

SOC 2

A report on controls concerning security, availability, processing integrity, and confidentiality.

ISO 27001

Framework of policies and procedures that includes all legal, physical, and technical controls involved in Guidewire's information risk management processes.

ISO 27701

Framework that addresses privacy information.

Guidewire's commitment to security extends to working across the software-as-a-service (SaaS) industry through its founding membership of the IT-ISAC Critical SaaS Special Interest Group (CSaaS SIG). Joining other cloud leaders, CSaaS SIG provides a forum for SaaS companies to collaborate on a collective defense strategy. The group focuses on improving the security and operational resiliency of their services as well as sharing intelligence information with the industry at large. This collective approach to security in the cloud guarantees that individual IT departments no longer have to navigate the complexities of security alone.

Scalability

The Guidewire Cloud Platform (GWCP) is scalable to meet the needs of the world's largest insurers through its use of modular architecture and flexible database design.

Scalability is one of the hallmarks of the cloud and the main driver of its growing adoption. Cloud computing infrastructure can dynamically add data storage, processing power, and networking capacity simply with minimal or no disruption.

GWCP combines containerization with cloud-native databases to take the headache out of scaling. It deploys containers across both the multi-tenant and single-tenant clusters of its hybrid tenant architecture. These clusters are orchestrated and managed by Kubernetes and which automatically scale to respond to fluctuations in resource consumption. Each cluster runs multiple nodes, offering fault-tolerance and high availability so if one node fails, that workload can be picked up by another node. The entire process is coordinated by control planes, which manage the nodes and pods in the cluster (Fig. 2). Additionally, in the case of the multi-tenancy cluster, each microservice can be scaled independently for fine-grained control of various workloads.

When it comes to scale, it isn't just a question of total capacity, but also what happens when things break or need to be fixed. Thanks to the smaller building blocks enabled by this container model, Guidewire can update, fix, and maintain areas of the GWCP with more granularity, allowing other parts of the application to remain untouched. Containerization allows maintenance to be completed without affecting other customer workloads, while Kubernetes' automation reduces the need for human intervention to restart failed or non-responsive containers.

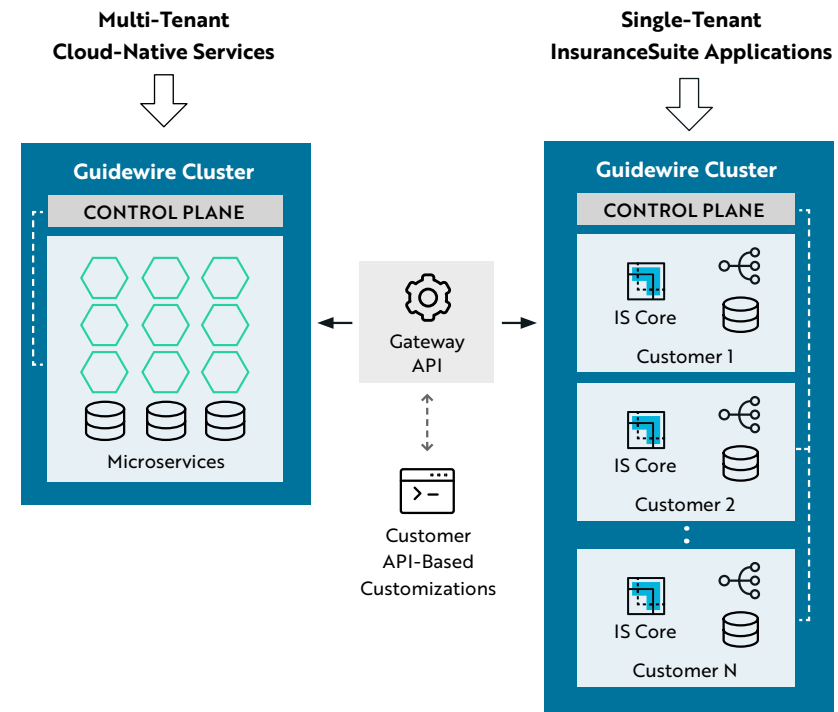


Fig. 2: Guidewire Cloud Hybrid Architecture

Guidewire uses a naming taxonomy based on astronomy to describe the hierarchy of components that make up its cloud setup.

Galaxy	AWS geographical region
Quadrant	Kubernetes cluster, on top of which Guidewire securely isolates and deploys multiple customers.
Star System	The Kubernetes namespace into which a customer deploys. Examples include Production, Testing, Development or User Acceptance Testing
Planet	Combination of tenant (i.e., an insurer) and project (business unit, for example claims and policies).

Fig. 3: Guidewire Cloud Taxonomy

The other major component of Guidewire’s approach to scalability is storing insurer data in relational databases managed by AWS Aurora. As an industry leading relational database management system, Aurora’s decoupled storage and compute layers deliver excellent scalability, high availability and performance, continuous backups, and automated replication across AWS availability zones.

The relational datastore contains the entirety of an individual insurer’s business transactions, responding to that insurer’s requirements. The database scales vertically based on an application’s demands by increasing the processing power of a single server or cluster, depending on an application’s needs, without customers having to manage it manually.

All these components of scale are complemented by Guidewire’s observability and monitoring functionality.

Finally, Guidewire uses a cloud naming taxonomy (seen here in Fig. 3 based on astronomy,) to further articulate the GWCP architecture.



Observability and Monitoring

In the realm of DevOps, observability and monitoring are vital when it comes to working with cloud applications and infrastructure.

As the complexity of enterprise systems increases, it's a challenge to discover problems, fix those issues, and predict future ones.

Monitoring and observability are central to meeting that challenge. Observability involves the collection of all relevant data, and can be anything including event success, failure, errors, etc. Monitoring is characterized by keeping track of incoming data and reacting when needed.

Collect	Monitor	Track
Log Aggregation	Metrics	Tracing
Collect data from application, systems, databases and infrastructure	Track key business and system operations that populate dashboards	Consists of spans to detail function calls and define how metrics are calculated

Fig. 4: Three main pillars of observability

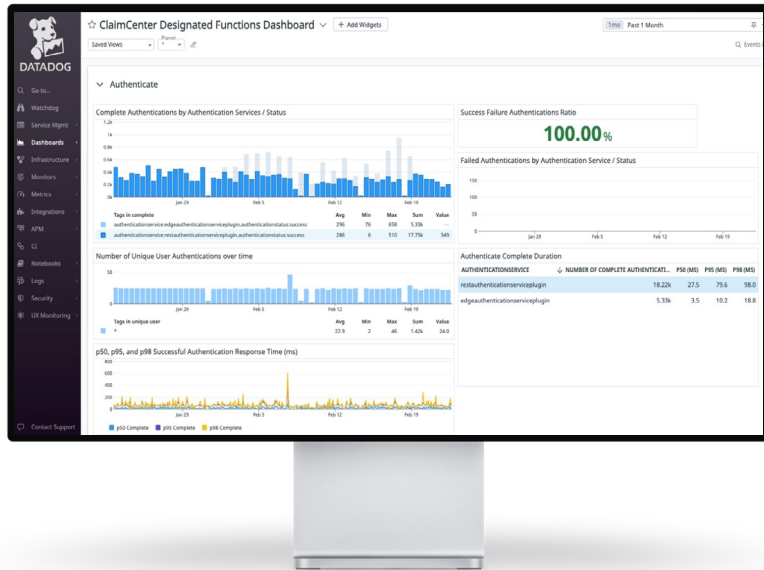
Guidewire enables observability in the form of three main components: logs, metrics, and traces, as outlined in Figure 4.

It's evident the terms observability and monitoring are closely connected and often used interchangeably, but it's helpful to think of observability as the overarching concept that monitoring makes possible. Monitoring can be defined as the collection and analysis of data pulled from various IT systems, using tools such as dashboards to track metrics and measure the health of applications. However, monitoring doesn't just track IT functions, it also can cover key business metrics such as the number of quotes issued, claims filed, or renewals processed.

At Guidewire, we use an industry leading tool called Datadog for observability. Datadog is an all-in-one tool that lets us provide our customers with the highest level of insight and observability.

We leverage Datadog for:

1. Monitoring
2. Dashboards - Creating visual representations of log messages and metrics
3. Application and Infrastructure Metrics - Including the InsuranceSuite Application that runs on top of Guidewire Cloud Platform as well as the cloud infrastructure



Let's dive into some of the Datadog features that Guidewire makes available to our customers for observability. The first one of these is dashboards.

Dashboards give insurers real-time monitoring in the case of Designated Functions. At Guidewire, we track the performance of these designated functions. A designated function could be how quickly a policy is bound, how quickly search runs when looking for a claim, etc.

While dashboards are the most visually interesting feature Datadog provides, a second feature, alerts, are equally useful. These alerts are generated by the dashboard based on specific criteria. For example, an alert could be generated if users are taking 20 seconds to log in or failing to log in at all.

These are just a couple Datadog features that are available to our customers, and are a good illustration of the power of observability and monitoring. We regularly provide improvements and enhancements to features on Guidewire Cloud, so be on the lookout for additional capabilities.



Updatability

Guidewire has made significant investments in infrastructure and automation to simplify and accelerate the adoption of cloud updates. These faster updates enable customers to take on new features and capabilities to help them deliver business value.

Frequent cloud updates provide a number of benefits to customers, from ensuring technical currency and performance enhancements, to boosting security hygiene to you maintain protection against new and potential threats, to enabling access to features insurers can implement at their own pace. With self-managed applications, version upgrades are often infrequent and overly complex, which makes it difficult to realize the full value of an on-premises application.

Guidewire makes three ski release updates every year. These updates are the most up-to-date versions of our software. Customers can take just those updates on an annual basis, or can request to participate in more. These updates are delivered by our automated tooling, and each update can be made to an implementation branch or production. The updates are delivered in a non disruptive way and we provide an update environment.

During the update process, no additional developer access to customer code is required, assuming all changes can be implemented practically through automation. In cases where developer access to customer code is needed, Guidewire will follow the standard request process. We recommend each customer to plan several weeks for this process, where most of the time is spent on their version of update validation.

The division of labor is another thing to consider, and is an important illustration of how we are shifting the burden from our customers to Guidewire.

Division of Activities

Guidewire

- Deliver the updated version of InsuranceSuite to Bitbucket
- Update the previous ski-release version
- Execute all customer server tests
- Start the development environment for the customer
- Update the customer database
- Provide a temporary environment with the update deployed

Customer

- Resolve any changes
- Validate the update for adoption
- Release the update to production

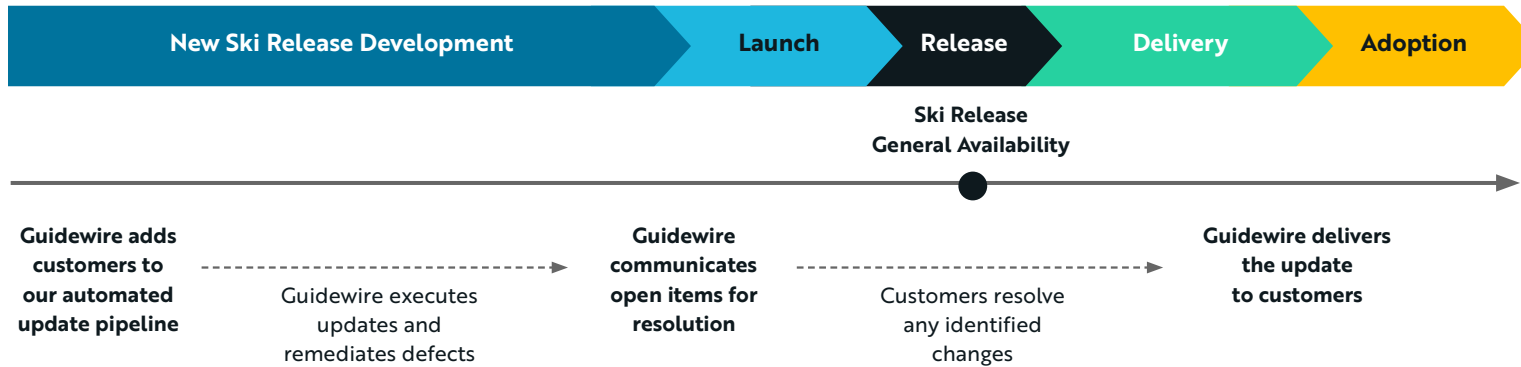


Fig. 5: Guidewire Cloud InsuranceSuite Update: Timeline and Process

Viewing this process as a timeline

- Prior to General Availability of a new ski release, such as Garmisch, we add the customer to our automated update pipeline
- We work to remove the chance of introducing changes that could impact customer configuration
- During this process, the customer is informed of any changes they have made that requires resolution for a smooth update
- After the release is made generally available, Guidewire delivers the updated code to the customer

Delivering consistent, easy-to-adopt cloud updates is a cornerstone of the value proposition for Guidewire Cloud, and it is made possible by Guidewire Cloud Platform. As we look to the future we will continue to invest in updates to make them even easier and more streamlined for our customers.

An early access customer had a goal to launch a new rental insurance solution in under six months. They had a lot of componentry that required integration between InsuranceSuite and multiple Insurtech vendors. Using Integration Gateway with a set of SurePath marketplace integrations, they were able to accelerate their integration development by three months, which resulted in going live a month ahead of schedule.



Application Integration

The Guidewire Integration Framework enables an ecosystem of world-class developers and creators to focus on innovation with a rich set of open integration frameworks and tools.

The average P&C insurer's core system includes several dozen integrations to critical business systems. If you've spent time building, testing, or deploying integrations, you've likely encountered the challenges that integrations can pose.

The Guidewire Integration Framework enables developers to integrate InsuranceSuite with third-party apps, using multiple APIs, messaging systems, or protocols. It provides the tools, best practices, patterns, and utilities that address integration challenges. The standardized interfaces and separation of functional and integration logic enable streamlined InsuranceSuite updates and allow integrations to be updated without needing to redeploy InsuranceSuite. Furthermore, with new frameworks and open APIs available exclusively on Guidewire Cloud, developers can more quickly and easily connect their core system with internal legacy systems and downstream apps across their enterprise ecosystem.

The framework is made up of three foundational capabilities:

Cloud API

Request data or initiate action from the InsuranceSuite application to connect to your enterprise apps and services.

Application Events

Publish business lifecycle events and related data to downstream systems in real-time, enabling event-driven cross-application workflows.

Integration Gateway

Develop integration apps with popular open frameworks using low code tools to bridge InsuranceSuite to external apps and services.



Data Integration

InsuranceSuite does not operate in a silo. It is connected to numerous systems, hundreds of systems in some cases, to enable the business of P&C insurance. Therefore, InsuranceSuite must support a wide spectrum of downstream data integration use cases such as financial and regulatory reporting, operational reporting, data warehousing and business intelligence, ad hoc analysis, predictive modeling, data science, and analytics. Use cases require easy access to InsuranceSuite data and support for both ETL (extract-transform-load) and ELT (extract-load-transform) based integration patterns.

The Guidewire Cloud Platform (GWCP) recognizes this need and provides the following data integration services for easy access to InsuranceSuite data. These services help customers make the cloud transition as smoothly and as rapidly as possible.

Data Integration Service	Description	Typical Use Case
Cloud Data Access (CDA)	Streaming uncurated data access in near-real time with all change history, schema versions, and custom fields stored in parquet file format in Amazon S3 buckets.	ELT data integration, ad hoc queries, analytic discovery, operational reporting.
Read Replica	Direct access to a real-time replica of the production database (AWS Aurora PostgreSQL) with no change history.	ELT-based integration patterns, ad hoc queries, and data warehouse feeds.
Snapshot Export	A daily snapshot of the production database (AWS Aurora PostgreSQL) with no change history.	Test data generation, data quality, data masking, and backups.

Mountain West Farm Bureau Insurance is using Data Studio and Explore to extract actionable insights out of data and improve products and pricing. Before it would take Mountain West at least a month to extract data and build a dashboard. With Data Studio and Explore data is immediately actionable for Mountain West and their actuaries can get the desired insights in minutes.

The Guidewire Marketplace has numerous partners that have built out-of-the-box connectors from these services to help insurers accelerate enterprise-wide data integration for reporting, data warehousing, and analytics.

In addition, Guidewire **Data Studio**, (currently available on an early access basis) is an ANSI SQL editor to create, manage, and publish business ready datasets. The curated datasets can be used for powering visualizations, predictive modeling, and integrations with downstream systems. Guidewire also offers **Explore**, an operational reporting BI application, that enables informed business decisions across claims, underwriting, sales, and service management.



For more information, contact us at
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At Guidewire we are committed to our customers' success. In the face of rapid change, Guidewire Cloud Platform enables insurers to enhance business agility, get to market faster, stay secure, and most importantly adopt a future forward technology platform that consistently delivers business-relevant features.

We hope this provides a comprehensive overview of the key components of the Guidewire Cloud Platform across security, scalability, observability, updatability, and integration. We look forward to partnering with you to maximize your success in the cloud.

Guidewire is the platform P&C insurers trust to engage, innovate, and grow efficiently. We combine digital, core, analytics, and machine learning to deliver our platform as a cloud service. More than 500 insurers in 38 countries, from new ventures to the largest and most complex in the world, run on Guidewire.