Compounding Process Guardian

The modern compounding landscape is a complex place, with multiple regulatory and professional standards to be addressed. Federal, State, and Local agencies are increasingly exerting overlapping regulatory standards to your daily practice. CPG™ was designed from the ground up with compounders in mind.

CPG™ is a complete cloud-based compounder software management solution. Our solution will consolidate and simplify your compounding operations, quality efforts, regulatory compliance tasks, as well as your documentation requirements.

CPG™ mitigates your safety & regulatory risks, by automating your entire compounding operation into a single cloud-based platform.

Integrating CPG™ into your business will:

Assure Patient Safety

Integrated into your operation's monitoring and documentation systems allows alerts and continuous monitoring of your operations, heading off variances, deviations, and overdue tasks or other critical notifications before they negatively impact your operations. Facility specific Quality Management requirements, standardized policy & procedures are perpetuated through our platform standardization easily tracked by all management and staff from our easy-to-understand, highly readable dashboard and customizable reporting.

Maximize Operational Efficiencies

By standardizing documentation, acting as an electronic repository for critical validation, verification, and other quality documents, CPG™ allows management and staff to

conduct daily tasks with the confidence that all the background work and documents are in-place to support your daily efforts.

With our integrated Standard Policy & Procedure Platform (*Powered by LDT Health Solutions, Inc.)* we reduce your worry around missing documentation or process deviations.

Incorporate best demonstrated practice into your operation

As the comprehensive, unified place for all equipment records, ingredient documentation, training records, compounding master-formulas, and related data, we can assist you in streamlining your operation. Employing our document flows and failure-modes analysis thinking which is embedded in our system, this frees management to observe, refine, and coach compounding staff allowing the introduction of best practice more easily, and in a controlled way.

Scalability for all compounding operations

Best demonstrated practices can be standardized, monitored, and documented across a wide business platform. Whether you are operating a chain of compounding pharmacies, a Multi-centered health system with many off-site clinics or a network of 503B Outsourcing Facilities, CPG™ can assist you in the monitoring & control across multiple locations, while at the same time tracking compliance, documentation and trends as well as variance. Identification of non-approved or non-standard practices more quickly from our easy to read dashboard, allows measured responses, better efficiencies, and the level of control necessary to safely conduct compounding operations in any practice setting.
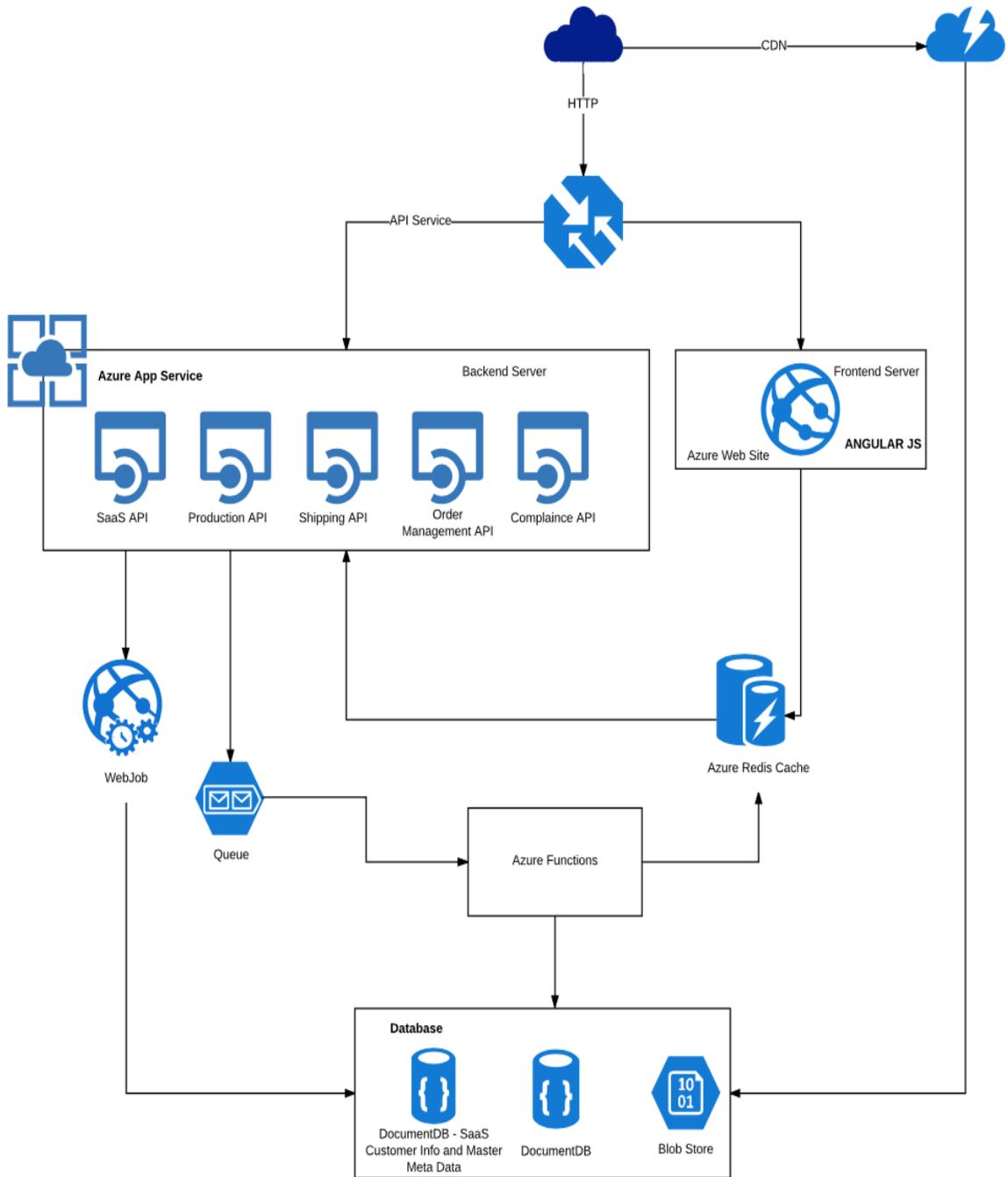
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Compounding Process Guardian (CPG) Technical Overview

High Level Architecture Diagram

Single Page Architecture

Design is based on SPA which is fast, since most resources (HTML+CSS+Scripts) are only loaded once throughout the lifespan of application. Only data is transmitted back and forth.

1. It is easy to scale, and it is easy to cache resources and no extra queries to the server to download pages are required.
2. SPAs are more user friendly, it works and feels more like an application then a web page.
3. The development is simplified and streamlined. There is no need to write code to render pages on the server.
4. SPAs are easy to debug with Chrome, as you can monitor network operations, investigate page elements and data associated with it.
5. SPAs can cache any local storage effectively. An application sends only one request, stores all data, then it can use this data and works offline.

Technology Stack

Database

Azure cosmos is our primary Database. It is built from the ground up with global distribution and horizontal scale at its core. Our data is globally distributed across any number of Azure regions by transparently scaling and replicating data wherever users are.

It has elastically scaled throughput and storage worldwide allowing you to pay only for what you need. Azure Cosmos DB provides native support for NoSQL choices, offers multiple well-defined consistency models, guarantees single-digit-millisecond latencies at the 99th percentile and guarantees high availability with multi-homing capabilities and low latencies anywhere in the world

Advantage

1. Turnkey global distribution
2. Limitless elastic scale around the globe
3. Multiple, well-defined consistency choices
4. Guaranteed low latency at 99th percentile
5. Industry-leading, enterprise-grade SLAs
6. Auto indexes all the fields

Reference: https://azure.microsoft.com/en-in/services/cosmos-db

Distributed cache

A distributed cache is shared by multiple app servers (see our architecture). The information in the cache isn't stored in the memory of individual web servers, and the cached data is available to all of the app's servers.

1. Cached data is coherent on all web servers. Users don't see different results depending on which web server handles their request
2. Cached data survives web server restarts and deployments. Individual web servers can be removed or added without impacting the cache.
3. The source data store has fewer requests made to it (than with multiple in-memory caches or no cache at all). Our application uses Azure Redis Cache.

REST API

The REST protocol totally separates the user interface from the server and the data storage. This has some advantages when making developments.

1. We can reuse same web API in other platforms like Mobile APPS, IoT, Desktop Applications
2. Visibility, reliability and scalability. The separation between client and server has one evident advantage, and that is that each development team can scale the product without too much problem. They can migrate to other servers or make all kinds of changes in the database, provided the data from each request is sent correctly. The separation makes it easier to have the front and the back on different servers, and this makes the apps more flexible to work with.
3. The REST API is always independent of the type of platform or languages: the REST API always adapts to the type of syntax or platforms being used, which gives considerable freedom when changing or testing new environments within the development.

Security

All client-to-service Azure Cosmos DB interactions are SSL/TLS 1.2 enforced. Also, all intra datacenter and cross datacenter replication is SSL/TLS 1.2 enforced.

API Protection

A JSON Web Token (JWT) is a JSON object that is defined in RFC 7519 as a safe way to represent a set of information between two parties. The token is composed of a header, a payload, and a signature.

Encryption at rest

All data stored into Azure Cosmos DB is encrypted at rest. Learn more in Azure Cosmos DB encryption at rest. It uses Patched servers As a managed database. Azure Cosmos DB eliminates the need to manage and patch servers, as it is done, automatically.

Security via SSL and HMAC secret based authentication is baked in by default.|
Security and data protection certifications Azure Cosmos DB has ISO 27001,
European Model Clauses (EUMC), and HIPAA certifications.

Robust and Stable

CPG is built to write correct globally distributed applications. The system offers an
intuitive and predictable programming model around data consistency. While strong
consistency comes with a price, writing large globally distributed applications against an
"eventually consistent" database results in an application code which is hard to reason
about, is brittle, and rife with correctness bugs.

1. Ensure that the system is "always on". The system must provide 99.99%
   availability regardless of the number of regions associated with their database.
   To enable customers to test the end-to-end availability properties of the
   applications
2. Database by itself automatically manages the schema/index and versioning.
   Keeping database schema and indexes in-sync with an application's schema is
   especially important when globally distributed.
3. Enable customers to elastically scale throughput and storage based on demand,
   globally. The system should deliver the configured throughput within 5 seconds
   at the 99th percentile