OPSTACK

Building a Multi-Cloud Deployment Portal from Proof of Concept to Production

A software company needed to expand their business by offering their enterprise software as a managed service in the public cloud. Starting with only an internal proof of concept, OpStack helped transform this initial foundation into a sophisticated cloud deployment portal that enables multi-tenant access across multiple public clouds. This solution created an entirely new revenue stream, allowing the client to launch over 10 cloud offerings over 5 years while attracting dozens of paying enterprise customers.

The Challenge

The client had built an internal proof of concept for cloud deployments but faced significant challenges in transforming it into a production-ready platform. The path from proof to production required addressing numerous complex technical requirements:

- **Automated Image Building**: Creating reliable, repeatable system images
- **Multi-Tenancy Architecture**: Supporting multiple customers while maintaining complete isolation
- **Multi-Cloud Support**: Initially AWS with later expansion to Azure
- **Advanced Network Connectivity**: Implementing firewall rules and on-premises to cloud connections
- **Operations Automation**: Streamlining deployment and management processes
- **Comprehensive Monitoring**: Both customer-facing and internal metrics
- **Alerting and On-Call Management**: Ensuring reliable service operation
- **Software Updates**: Maintaining current versions without disruption
- **Backup and Recovery**: Protecting customer data and systems
- **SSL Certificate Renewal Automation**: Managing certificate lifecycle across deployments
- **High Availability Configuration**: Ensuring reliable multi-machine orchestration
- **Architectural Coupling**: Addressing component dependencies that complicated system updates and maintenance

For the client's customers, this solution promised to accelerate implementation and offload the complex management of the software platform. For the client, it represented an opportunity to create a new revenue stream and add value to existing customer relationships.

The Solution: The OpStack Way

OpStack led the transformation from proof of concept to production-ready platform following its core principles:

Simplify

- Created a unified control plane for multi-cloud orchestration
- Designed a modular architecture to accommodate different deployment types
- Developed a customer-friendly portal interface to abstract underlying complexity
- Established central management of the entire deployment lifecycle

Standardize

The implementation established standards across:

- **Cloud Infrastructure**: Using cloud-native IaC (CloudFormation, ARM Templates)
- **Image Building**: Implementing Packer for consistent system images
- **Operating System Configuration**: Deploying Ansible for reliable automation
- **CI/CD Pipelines**: Implementing continuous integration and deployment for both image builds and portal software
- **Automated Testing**: Establishing test frameworks for infrastructure and application validation
- **Monitoring**: Standardizing on OpenTelemetry (OTEL) collectors
- **Network Architecture**: Creating reusable patterns for advanced connectivity scenarios
- **High Availability**: Developing consistent approaches to multi-machine orchestration

Automate

Comprehensive automation was implemented across:

- **Deployment Processes**: Complete end-to-end automation from provisioning to configuration
- **Infrastructure Management**: Automated scaling, updates, and maintenance
- **Software Installation**: Automated setup of complex HA configurations
- **Monitoring and Alerting**: Integrated observation and notification systems
- **Network Configuration**: Automated setup of secure networking across environments

Monitor

The solution incorporated comprehensive monitoring through:

- OpenTelemetry instrumentation for application-level visibility
- Cloud-native monitoring services for infrastructure metrics
- Customer-facing dashboards for service transparency
- Internal operational metrics for proactive management
- Integrated alerting and escalation processes

The Impact: Smart Business Results

Business Growth

- Created an entirely new revenue stream from managed cloud offerings
- Expanded from zero to over 10 cloud offerings over 5 years
- Acquired dozens of paying enterprise clients
- Enhanced existing customer relationships by adding cloud options
- Increased customer retention through increased platform stickiness

Technical Capabilities

- Successfully established multi-cloud support (AWS and Azure)
- Implemented secure multi-tenant isolation with centralized management
- Created modular deployment types to address diverse customer needs
- Developed advanced networking capabilities for hybrid cloud scenarios
- Established reliable high availability configurations

Organizational Development

- Evolved from a single team to a multi-team structure with dedicated product ownership
- Established ongoing architectural oversight and engineering capabilities
- Created sustainable operational processes for long-term support

Project Evolution

The cloud portal evolved through several key phases:

1. **Proof of Concept to Production**: Initial transformation of the prototype to a viable product
2. **First Customer Onboarding**: Validation of the approach with real-world usage
3. **Modular Offer Types**: Architectural evolution to support diverse deployment scenarios
4. **Advanced Networking**: Implementation of complex connectivity solutions
5. **Multi-Cloud Expansion**: Extension from AWS to include Azure support

Through this evolution, the project grew from a single team led by OpStack to a multi-team effort with a dedicated product owner, with OpStack continuing to provide architectural guidance and engineering expertise.

Key Lessons

1. **Understand the Goal**: A clear vision of the business objective is essential for successful transformation
2. **Design for Modularity**: Building modular components enables adaptation to changing requirements
3. **Context Sharing is Crucial**: Effective knowledge transfer between teams ensures continued success
4. **Instrument Early**: Building in monitoring from the start provides essential operational visibility
5. **Watch Out for Strong Coupling**: Maintain loose coupling between components to allow for independent evolution

Conclusion

Through the application of OpStack's principles — Simplify, Standardize, Automate, and Monitor — the client successfully transformed an internal proof of concept into a sophisticated multi-cloud deployment portal. This solution not only created an entirely new revenue stream but also enhanced their competitive positioning in the market. The project demonstrates that with the right approach, even complex enterprise software can be successfully delivered as a managed service across multiple public clouds.