CASE STUDY

Topgolf Standardizes on VergeOS Across 100+ Venues, Offices and Core Data Centers

A Technical Report on Infrastructure Simplification, Operational Efficiency, and Strategic Trust

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INTRODUCTION: INFRASTRUCTURE AS A COMPETITIVE ADVANTAGE

Topgolf, a global sports entertainment company and a subsidiary of Topgolf Callaway Brands (NYSE: MODG), operates over 100 high-tech venues across the United States and worldwide, including locations in Europe, Asia, and the Middle East. Each venue offers an interactive golf gaming experience that blends physical gameplay with digital analytics. Players use real golf clubs and balls embedded with RFID, aiming at a field of electronically monitored targets. Toptracer technology visually tracks every shot in real-time, while advanced analytics systems power extended reality games and provide performance insights. These venues are social destinations, offering climate-controlled hitting bays, a full-service bar, dining options, and private event spaces.

Behind this immersive experience is a specialized and distributed IT infrastructure. Each venue is an autonomous edge data center that must run with minimal dependency on central resources, supporting real-time data capture, rendering, and analytics. For Topgolf, infrastructure is not a background utility. It is a strategic business enabler, critical to player experience, revenue continuity, and future innovation.

> **We're a technology company masquerading as a sports and entertainment company. At Topgolf, technology is the heart of our player experience —without it, we're a driving range with an attached restaurant and bar.**
>
> — Scott Forehand, Manager of Global Infrastructure at Topgolf

Scott Forehand, the Manager of Global Infrastructure at Topgolf, is leading the VergeOS transition. With nearly three decades of experience in technology, enterprise architecture, SDDC design, and virtualization platforms, Scott has played a pivotal role in Topgolf's evolution from a traditional IT environment to an orchestrated, software-defined infrastructure. He is a recognized leader in the IT community, serving as a Dallas/Fort Worth VMware User Group Leader, and an Elevate Technology User Group Ambassador.

Joining Scott on the project was Jason Sova, Architect for Enterprise Infrastructure. Jason managed the evaluation and testing of alternative platforms, leading the development of a multi-month proof-of-concept, automation, and national rollout. His 20+ year career spans critical infrastructure roles including Entrust Datacard and the Canadian Department of National Defense bringing expertise in VMware Horizon, Dell VxRail, GPU workloads, and infrastructure as code.

THE TRIGGER: LICENSING SHOCK AND A COLLAPSE IN TRUST

Topgolf's infrastructure modernization effort was catalyzed by the broader industry disruption caused by Broadcom's $61 billion acquisition of VMware. Known for rapidly increasing profitability in acquired companies, Broadcom introduced sweeping changes to VMware's licensing, packaging, and customer engagement model. Longstanding perpetual licensing models were deprecated in favor of aggressive subscription bundles, and support contracts became costlier and less flexible.

SELECTING VERGEOS: FUNCTIONALITY, FLEXIBILITY, AND PARTNERSHIP

VergeIO emerged as a top candidate not only because of its technical depth but because of its responsiveness, transparency, and willingness to work as a true partner. From the beginning of the engagement, VergeIO demonstrated a commitment to shared success, co-developing a Terraform provider, responding rapidly to feature enhancement requests, and engaging directly with Topgolf engineers to support advanced workflows.

Where other vendors led with sales tactics, VergeIO led with architecture. The platform offered a unified, software-defined data center solution that replaced hypervisor, storage, and network layers in a cohesive, streamlined package. VergeOS integrates these capabilities into a single operating system that manages virtualization, storage services, networking, and high availability from a centralized control plane—while supporting automation and observability through a modern API layer.

> **VergeIO wasn't selling a SKU—they were investing in our success. That's what set them apart. VergeIO reset the bar for how I evaluate partner relationships.**
>
> — Jason Sova

> **VergeIO has proven their value as a strategic partner for Topgolf, and the platform has been bulletproof.**
>
> — Scott Forehand

DEPLOYMENT ARCHITECTURE

Venue Standardization

Topgolf's venue deployments are transitioning from six-node Dell VxRail clusters with 35TB of storage capacity, to three-node VergeOS clusters with 5TB of storage capacity. This architectural shift reduced both hardware and power requirements without compromising performance. VergeOS' advanced deduplication—an inline, block-level system that eliminates redundant data across VMs and storage volumes—allowed the team to run more workloads with fewer resources, extending available capacity and improving backup efficiency.

Each venue supports a mix of workloads, including Kubernetes microservices, Windows and Linux servers, camera systems with machine learning, ball-tracking analytics, state-specific compliance applications, and AV integration. Real-time demands required reliable and autonomous edge clusters that could operate without a central dependency during WAN interruptions or local outages

> **VMware and VxRail forced us into five-node minimums. VergeOS is smart enough to run efficiently on three—and that means real savings.**
>
> — Scott Forehand

Data Center Modernization

Topgolf maintains a centralized data center in the Dallas-Fort Worth area that supports internal systems including business intelligence, corporate data platforms, and centralized management services. VergeOS has been deployed at this core site to mirror the architecture used at the venues, simplifying maintenance, replication, and automation across all locations.

As part of their forward-looking strategy, the team has deployed two VergeOS nodes equipped with NVIDIA L40 GPUs. These nodes are not currently running production AI workloads, but are positioned to support VergeIQ, VergeIO's integrated AI infrastructure framework, which is embedded directly within VergeOS. VergeIQ enables organizations to run AI inference, RAG pipelines, and model training alongside traditional workloads—without requiring external orchestration layers, such as Kubernetes. Topgolf plans to leverage these features for real-time swing analysis, shot trajectory modeling, and personalized player metrics.

> **We started this AI project before COVID. VergeOS gives us the platform to finally finish it—without sending data to the cloud and without much additional spend.**
>
> — Jason Sova

OPERATIONAL CONTROL WITH SITE MANAGER AND TENANCY

To manage infrastructure at scale, Topgolf utilizes VergeOS Site Manager in conjunction with multi-tenant segmentation, leveraging VergeOS' Virtual Data Center (VDC) technology. A VDC is an isolated, resource-contained environment that includes its own compute, storage, networking, and policies—enabling each tenant to behave like an independent data center. VDC tenants are aligned to three U.S. time zones—East, Central, and West—to support backup and DR workflows, staggered upgrades, and regional policy controls. Each tenant acts as a logical boundary for replication and operations, simplifying scheduling and audit compliance.

The company has integrated VergeOS into its observability platform using native APIs, enabling real-time visibility into site status, storage health, and replication state. This level of automation allows the operations team to respond proactively to anomalies while minimizing console sprawl.

> **We used to bounce between dozens of vCenter consoles. Now everything is centralized. It's tenant-aware, API-driven, and fully auditable.**
>
> — Jason Sova

DEPLOYMENT AND UPGRADE WORKFLOW

The migration process was efficient and repeatable. In one example, the team completed a full VMware-to-VergeOS migration in a single day. On the following day, they completed an upgrade of the VergeOS cluster during business hours—an operation that would have required a full maintenance window under the previous VMware architecture. VergeOS upgrades were seamless; they generated no visible impact, even during periods of active customer use.

The team can now upgrade the entire fleet in three weeks, using staggered rollouts by time zone. Previously, platform upgrades could take two to three months, requiring coordination with licensing changes and scheduling downtime.

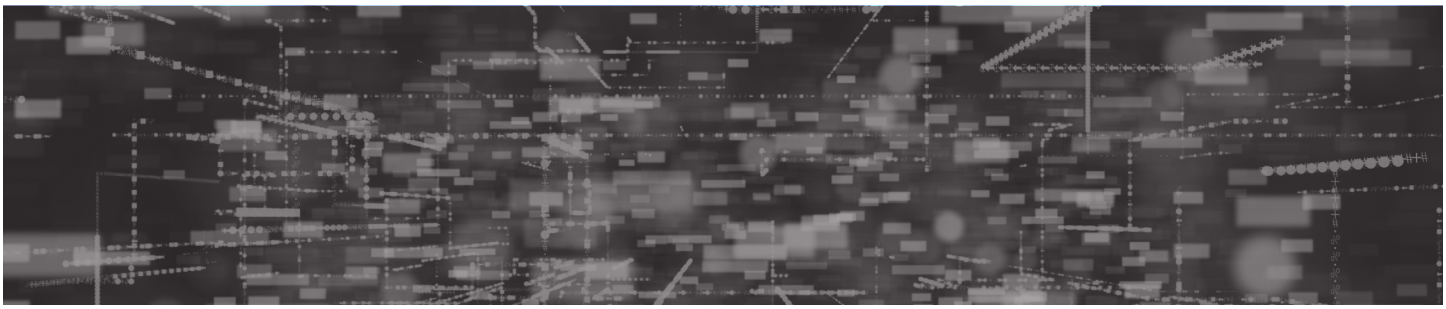
> **VergeOS upgrades barely drop a packet. Seamless upgrades have never been consistent with VMware vSAN, let alone GPU-enabled gaming workloads.**
>
> — Scott Forehand

OPERATIONAL AUTOMATION: FROM MANUAL TO AUTONOMOUS

Prior to VergeOS, power loss events required 30–45 minutes of manual intervention to shut down and bring up workloads at a venue. Today, VergeOS APIs helps automate the entire sequence. When power is lost, a CI/CD pipeline initiates a controlled shutdown in under 15 minutes. When power is restored, the system automatically validates storage layers, restarts critical services, and posts a Slack notification for audit traceability.

> **We spent 8 months trying to automate this on VxRail, and it failed to work reliably. With VergeOS, it took less than a month—and now it just works.**
>
> — Jason Sova

> **It's at least 50% faster to boot a site with VergeOS than VMware. We don't wait for VMware vSAN to re-validate anymore.**
>
> — Scott Forehand



BUILT-IN PROTECTION: ELIMINATING THIRD-PARTY BACKUP

Topgolf initially planned to continue using its existing data protection solution, Rubrik. However, after testing VergeOS extensively and validating its integrated protection capabilities, the team determined that VergeOS alone met all of their operational and compliance requirements. This unexpected discovery allowed Topgolf to eliminate Rubrik entirely—saving cost, reducing management overhead, and streamlining operations.

VergeOS includes a suite of built-in technologies that provide comprehensive protection against both accidental deletion and catastrophic failure:

- **Snapshots with ioClone:** VergeOS leverages crash-consistent, space-efficient snapshots that are instantly available for recovery or rollback. ioClone allows administrators to create an unlimited number of snapshots per virtual machine or volume without impacting performance. These snapshots are immutable and ideal for testing, versioning, and both short-term and long-term retention.

- **Repair Server with ioGuardian:** ioGuardian monitors the health of each node and provides automatic detection, isolation, and repair of faulty data blocks. In the event of hardware or media failure, ioGuardian facilitates rapid restoration of lost data, ensuring that applications remain online and consistent.
- **Replication with ioReplicate + Virtual Data Centers (VDCs):** VergeOS enables tenant- or workload-level replication between sites using Virtual Data Centers. VDCs are logical boundaries that encapsulate compute, storage, and network resources. ioReplicate maintains near real-time copies of data between VDCs, allowing Topgolf to implement a zoned DR strategy across its three regional tenants (East, Central, West). In the event of a site-level failure, workloads can be restarted in another tenant with minimal RPO/RTO.

Together, these capabilities give Topgolf full confidence that its infrastructure is not only performant and scalable, but also resilient by design.

> **We didn't plan to replace Rubrik. But after seeing how ioClone, ioGuardian, and ioReplicate work together, we realized VergeOS gave us everything we needed—without the added cost or complexity.**
>
> — Jason Sova

FINANCIAL AND TECHNICAL RESULTS

Topgolf will realize significant annualized savings fueled by moving to VergeOS. The savings are derived from multiple areas:

- Elimination of VMware licensing
- Evolving data protection and experience delivery strategies
- Use of commodity Dell PowerEdge hardware instead of Dell VxRail
- Reduction in power, cooling, and floor space at each venue
- Time savings from automated upgrades and failover workflows

In addition to cost improvements, the technical benefits have been substantial:

- Greater resiliency due to simplified design and self-healing capabilities
- Hardware flexibility and deduplication at the storage layer
- Native support for backup and replication workflows, including:
  - Immutable, crash-consistent snapshots with ioClone
  - Policy-based replication to alternate sites or tenants
  - Isolated, tenant-based rollback for testing or restoration
- API-controlled retention enforcement to prevent accidental deletion
- A unified control plane that scales from edge to core

> **During testing, I've purposely misconfigured clusters, and VergeOS still worked. That's how intelligent and forgiving the platform is.**
>
> — Jason Sova

CONCLUSION: A NEW STANDARD FOR INFRASTRUCTURE PARTNERSHIP

Topgolf's infrastructure team set out to find a platform that could meet their current needs while enabling future innovation. With VergeOS, they found a solution that simplified operations, reduced cost, increased reliability, and enabled forward-looking use cases such as AI-powered venue analytics. More importantly, they found a partner committed to their success.

> **Working with VergeIO has been the best partner experience of my career.**
>
> — Scott Forehand

> **No other technology partner has been this responsive, this committed, or this aligned with our goals.**
>
> — Scott Forehand

With VergeOS in place, Topgolf has turned a period of uncertainty into a platform for long-term growth, resilience, and differentiation.