



## **The Internet Data Center as an Ecosystem**

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**Treadstone 71**

An ecosystem is defined as all the members of a biological community and the physical environment in which the community exists. Nutrients move around the ecosystem in loops. This community together with its environment functions as a unit. All ecosystems are open systems in the sense that energy and matter are transferred in and out.

Within each ecosystem, there are habitats which may also vary in size. A habitat is the place where a population lives. A population is a group of living organisms of the same kind living in the same place at the same time. All of the populations interact and form a community. The community of living things interacts with the world around it to form the ecosystem. The habitat must supply the needs the populations, such as food, water, temperature, oxygen, and minerals. If the population's needs are not met, it will move to a better habitat. Habitats can be shared by several populations. In addition, there are several shared layers of the habitat that can be deemed a nested hierarchy.

The Internet Data Center ecosystems of today do not form such a cooperative community. In fact, they cannot even be called ecosystems. They are evolving over time to the goal of becoming an organic ecosystem. Successful Internet Data Centers of the near future need to be constructed in such a way as to foster this type of symbiosis.

Let's look at this from the inside out. Customers (populations) come in varying sizes with different software and hardware requirements and needs. If they are expected to live in coexistence in the same habitat, the habitat or shared infrastructure, must provide all the power, air, fire prevention, storage, disaster recovery, security and data protection, connectivity and networking, monitoring, load balancing, content management, and more to support, sustain, and grow the customers. The shared infrastructure is a dense packed environment that conserves on power and generates less heat than like solutions of the past. This base layer of the habitats nested hierarchy is a key element in the habitat but, unto itself, the shared infrastructure is a heterogeneous environment that needs help in fully realizing the benefits of its component parts.

The next layer of the habitat or provisioning engine, encircles the shared infrastructure with automating software and common interfaces that facilitate interoperability and extract the inherent value of the shared infrastructure into a viable solution for the customer. The homogenization of elements in the habitat is accomplished through the utilization of software to create a symbiotic habitat and subsequently, a thriving ecosystem. The customer expects this to be the norm and should be able to depend upon it in order to focus on developing its own customers by focusing on its mission. This powerful engine helps standardize internet data center operations with cost control

measures that automate the customer subscription process, server build and deployment processes, application delivery, security, monitoring, billing, and application upgrades and enhancements. The solution automates the operation and control of software server platforms, including server hardware discovery, while enabling the delivery of pre-defined vendor hardware and software leading to a stable and growing habitat for the customer.

The Network Operations Center is the overall epicenter of the habitat that utilizes the provisioning engine to optimize the shared infrastructure in helping to streamline the work order execution and management through centralized job scheduling for customer site builds. This is performed in an automated fashion, removing much of the manual interaction and subsequent errors associated with many customer implementations. It is from the Network Operations Center that growth of the habitat is centralized. The daily care and feeding of the habitats populations (customers) are directed from this main layer of the hierarchy. Inventory management, billing, configuration control, asset utilization and usage metering as well as the digital rights management (licensing) and security of the customer's site is managed here.

The customer focused Network Operations Center is a tool for the customer and window to the habitat. It provides superior customer service and relationship management. Customer work orders, service activation and deployment, and auto-discovery of pre-racked and stacked hardware and server blades, can rapidly activate a customer's site and employ a virtual data center methodology by utilizing what they need when they need it. The customer can view all activities within the habitat if so desired. Employing this solution gives the customer an advantage in operational efficiencies and corresponding cost allowing them to compete effectively. It also lays the groundwork for the auto-provisioning of directory services, databases, and applications of most any type and complexity enabling the customer to quickly grow to meet and exceed new demands and requirements.

All the customers utilizing the same habitat help form the Internet Data Center ecosystem. In order to meet the demands of the customer, multiple distributed ecosystems need to interact even though they appear to be a single location. This ensures operational continuance, increased habitat reliability, and protects against potential disasters to one or more of the ecosystems.

On demand customer need for more habitat resources can be expected. Processing and storage utilization and performance will ebb and flow with the seasons. The availability of these elements of the habitat serves to accelerate time-to-market solutions for the customers, their corresponding responsiveness and meet ever-mounting demands for the customer's solution.

The habitat must proactively anticipate the growth of the ecosystem in order to rapidly increase the depth of its elements in meeting customer requirements, creating shorter solution introduction timeframes and production lead-times. This anticipation however, must occur in a just-in-time assembly line approach to growth. This affords the Internet

Data Center ecosystem the ability to acquire what is needed when it is needed while keeping the associated costs low. This ensures continued viability of the overall ecosystem and passes the advantages onto customers to enhance their business, keep their information technology costs in check, and provide them the reliability and trust they demand in their Internet Data Center ecosystem.

It is not far off the horizon whereby the technical innovation required to create and sustain such an ecosystem will be the norm. The ecosystems driven by this innovation will enjoy a period of genuine competitive advantage. Those customers who utilize and become part of such an ecosystem will also enjoy a period of competitive advantage by keeping their information technology costs in check through the operational efficiencies of the ecosystem.

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