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11 Steps to Data Center Design

Adaptivity CEO Tony Bishop explains how the right infrastructure aligns processing demands with resources.

By Tony Bishop, CEO, Adaptivity September 22, 2008

The following 11-step program enables IT organizations to correlate business processing demands with relationships and dependencies of processing resources to design a data center with the right infrastructure qualities to ensure optimal service and deliver in the best manner possible in terms of performance, costs, availability and efficiency.

1. **Economic Model** Define the business and IT linkage of demand and supply. Orient the analysis and model creations around the interactive dynamics of consumption of IT resources by the business and the fulfillment behavior of processing by IT. This needs to be correlated with the value-chain function and the corresponding products or services, differentiated by business type (liquidity, risk transference, advice), business importance (margin, labor, flow) and cost to transact.
2. **Demand Mapping** In natural language terms, define and capture the "day in the life of the business" — what it expects and where there are problems. Be sure to understand sensitivities to cost, bottlenecks and timing constraints — in particular, the quality attributes and operational requirements of the business in terms of calendar events, demographics and competitive benchmarks across the straight-through-processing (STP) value chain.
3. **Consumption Management** Instrument and capture objective factual data on which users, accessing which applications, consume which server, network, application and storage resources and for how long. In particular, ensure that end-to-end delivery is correlated against consumption measures of latency, availability, throughput, data aggregation and persistence, disk swapping, memory volatility and coherence, compute time, event size, and I/O time.
4. **Business Policy and IT Security Enforcement** Ensure comprehensive, real-time business and security policy enforcement in bare-metal-speed time frames. The ability to implement point-of-policy enforcement and administration that serves both business agility requirements with guaranteed, nonrepudiated transactions and secure data delivery creates a competitive advantage and significant efficiencies compared to traditional, regulatory-driven entitlement strategies.
5. **Dynamic Run Time Orchestration Management** Run-time control and execution enforcement means ensuring that the right work gets done at the right time with the right resources. Business operates dynamically in real time; your infrastructure needs to, as well. Think of infrastructure as a composition of service delivery units that can be consumed in a variable manner: on-demand consumption and on-demand reconfiguration.
6. **Customizable Infrastructure Footprints** As it executes across the digital supply chain, the trade life cycle experiences fluctuating volumes, frequency and workload types. Firms have to tailor the infrastructure service footprint to an ensemble of components and capabilities that can ensure optimal service delivery and efficiency for variable processing requirements in areas, including market data collection and delivery, data delivery into the trading process, trade engine execution, trading decision support, and on-demand risk and post-trade processing.
7. **Unified Fabric** This eliminates the design limitations of relevant systems that are not connected in a way that provides the best performance and least amount of infrastructure. The unified fabric combines integrated infrastructure service footprints that encapsulate compute, memory, disk, I/O, storage and various processing appliances into a single footprint while incorporating quality of service, content acceleration, switching, routing and load balancing as needed. This drives speed, scale and cost efficiencies.
8. **Virtual Infrastructure Lifecycle Management** Enable policy- and event-driven, bare-metal provisioning of infrastructure services that supplement dynamic peak transaction loads and near real-time provisioning of additional capacity on demand.
9. **Implement Virtual Resources** Once run-time management, resource management and instrumentation are in place, only then do you implement "everything virtual." This is a critical lesson that traps most organizations where they start — bottom-up — without the ability to manage and ensure business alignment.
10. **Product and Portfolio Management** Coalescing business and technical priorities in continuous capability adoption will ensure sustainment and differentiation of your business through IT.
11. **Service and Change Management** Dynamic models of operation require processes and procedures of service, delivery and change management to accommodate the on-the-fly and "as needed, when needed" operations of IT.

Adaptivity is a Charlotte, N.C.-based IT advisory firm specializing in strategy, architecture and operating models.