

State Data Center

Common IT Technical Definitions

- 1) **Consolidation:** This term is too broad on its own without a qualifying adjective. We've identified five types of consolidations:
 - a) **Data center consolidation:** bringing the resources of two or more data centers together to improve scalability of operations including purchasing power, support and infrastructure (networks, storage, power, heating, cooling, etc). Pooling of infrastructure generally improves performance at the same or reduced net cost. Other aspects of data center operations, such as security, are shared, providing more consistent functionality across the organization (in this instance, the state enterprise).
 - b) **Server consolidation:** Increasing utilization rates on servers by implementing two or more compatible applications on a single server. This is an outgrowth of the common practice of running single applications on a server, or in many cases, components of an application run on different devices. Key performance metric is server/CPU utilization – the use of aggregate reserve capacity.
 - c) **Network consolidation:** Leveraging network resources across multiple organizations by sharing circuits and network devices. Consolidating network resources often leads to more network capacity per unit than most organizations could afford on their own. (E.g. if 4 separate data centers each have Internet circuit utilized at 70% (30% reserve capacity), consolidation allows eliminating one circuit (cost reduction), while maintaining the same available bandwidth *and* reserve capacity.)
 - d) **Software consolidation:** Reducing the number of similar applications that are used by an organization, eliminating redundant support and licensing charges. Purchase leverage is increased (buying in bulk.) An example of this is moving all agencies to a single timesheet application rather than each developing and maintaining their unique application. The major risk with software consolidation is that some organizations may have to compromise on requirements (often perception rather than reality).
 - e) **Consolidated services:** Consolidated services refer to two or more organizations using a shared solution or service. This is a scaled down version of software as a service or enterprise class services. Consolidated services, while providing some benefit of reduced costs, may not scale to the enterprise level or can also refer to services that are not considered enterprise standard but still in limited use. For example, an enterprise may adopt Exchange as a standard email solution. Two organizations, which both use Lotus Notes, could consolidate their services to share support costs. While Lotus has the capability to serve the Enterprise, since it's not the accepted standard, it would be a consolidated service in this example.
- 2) **Enterprise:** The term enterprise refers to an entire legal or stand-alone organization. For example, it could refer to a public, non-profit or privately held organization. In state government, there can be confusion between

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individual agencies defined as an enterprise and the entire state government defined as an enterprise. "*Agency enterprise*" refers to a single agency as an enterprise unit, whereas "*state enterprise*" means the entire state government including all branches operating as a whole to serve its collective stakeholders. While the Oregon state government has three branches (executive, legislative and judicial) with independent operations, there are still many functional services common to all three. An enterprise view of state government would consider the opportunities for efficiencies and improved effectiveness by identifying standard solutions to those common services (for example, accounting, payroll, service desk operations, etc).

- 3) **Utility computing:** Utility computing provides computing resources, such as computation, storage and communications, as a metered service similar to a physical public utility (such as electricity, water, natural gas, or telephone network). Utility computing is the commoditization of standardized computing services, where costs are highly competitive and units of computing services (processing, storage, etc) are interchangeable. Utility computing also offers on-demand scalability where temporary or immediate changes in demand are accommodated and charged accordingly (users pay for resources consumed rather than investing in hardware, software and support – all costs associated with providing the service are amortized and embedded in the per unit rate).
- 4) **Virtualization:** Virtualization is a set of techniques for sharing resources. It can apply to storage or computation. For purposes of the SDC, we can confine the definition to server virtualization, which means sharing a single resource among multiple users, giving each user the appearance that they have a dedicated resource. It differs from server consolidation in the sense that in server consolidation, it's clear to all users that they share the same device. In virtualization, the users are not aware of any one else using the device and it appears that they have a resource at their disposal. An example is virtual servers, where a physical server can host multiple virtual servers, each with all the properties of a real physical, stand alone server – unique IP address, host name, storage & memory allocation. The intended result is the ability to maximize physical resource utilization, while meeting the need for a (perceived) stand alone server.
- 5) **Cloud computing:** Cloud computing is a relatively recent term which refers to using computing resources (computation and storage), available through the internet, where the exact location or provider of the resources may or may not be known. The distinction between cloud computing and service providers is becoming blurred, but generally a user knows who they are dealing with when they sign up for a service provider. While that is generally the case in cloud computing, it may not always be true. Cloud computing offers some tantalizing benefits around scalability and cost, but introduces some additional security concerns because of loss of control.

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- 6) ***Software as a Service:*** A growing industry is Software as a Service (SaaS) where users purchase functionality usually on a per-user, per-period basis. For example, Salesforce.com provides contact management functionality for a set fee per month per user. Other solutions are emerging where the vendor provisions hardware, software, middleware, communications, and support while providing functionality on a per-unit basis. The line between cloud computing and SaaS is becoming blurred. Users of SaaS will not own any of the underlying components and are only directly pay for the service. In some instances, services are offered free of charge (for example, Google Apps) or on some other cost recovery basis (for example, ITMAQ where procurement services are paid by the winning bidders in one cost model).