Topic:

All about “the cloud.” (Part 3 of 3)

Characterizing Workloads and Deciding on Placement

Your highest priority in deciding workload placement is to understand your organization’s business needs and pain points. What are the issues that keep you up at night—growth, data control, cost, IT scale? Use these priorities to guide your decision process.

Business Considerations

While technical considerations are important, organizations may already have firm positions about the business needs that will dictate your cloud strategy. Before going into detail on specific workloads, review the general rules of thumb below. These can often spare you from unnecessary workload analysis. Further, different industries prioritize their considerations differently. For example, in the academic segment, Intel has consistently found that the three major business considerations for workload placement include:

- **Legal requirements –** Are there regulations that require educational institutions to keep data on site?
- **Tolerance –** What is an acceptable level for trade-offs (e.g., slightly reduced performance or lack of customization for a reduced data center footprint)?
- **Risk –** What risk is the organization willing to accept? Can the solution go offline? Who owns the data in the cloud? Using the above business considerations, Intel has been able to successfully advise the right public and private/hybrid cloud mix for K-12 and higher-education customers.

Technical Considerations

After reviewing critical business considerations, select the technology that supports your goals. Some applications are better suited for public clouds, while others are better for private clouds. The following overview provides foundational elements to understand before you consider more complex workload placement. In 2016, Intel conducted more than 125 focus groups worldwide across all major industries. This internal research identified the four most important technical characteristics that help determine cloud workload placement. Note that priorities differ based on workload type; however, Security was identified as “high priority” most frequently across all groups. The top four technical characteristics are as follows:

- **Performance –** Primary use cases, which apply to workloads with very high performance scores, include the following: 1) Performance and latency in relation to an end user’s location, such as engineering solutions that reside physically near engineering departments. 2) Performance for resource-intensive transactions (compute, memory, and I/O) with guaranteed quality of service and response agreements.

- **Security –** Some applications process and house data—intellectual property (IP), personally identifiable information (PII), and personal health information (PHI—that could cause harm to the organization if affected by malicious or accidental actions. This rating also incorporates whether or

not security solutions are broadly available for a particular workload—security solutions are fairly mature for email workloads

- **Integration –** Connections to other databases, frameworks, applications, workflows, and endpoints present challenges to both traditional and cloud migrations. The complexity and quantity of integrations impact the workload placement because of the increased cost to integrate into multiple clouds. Each integration must be assessed, modified, and refactored to meet the operational level agreement (OLA).
- **Data volume –** There are two major factors: 1) data size and 2) location (where the data is created and managed). Large datasets can be challenging to transfer across distances. For example, network log data (a large local dataset) for analytics would be cost prohibitive to transmit and store externally, and it would significantly extend the time to achieve insights.

By scoring the above technical considerations for a specific workload, then adding together the individual scores for performance, data volume, integration, and security, you can calculate a total attribute score. In comparing the multiple attribute scores across workloads, their suitability to the public or private cloud becomes clearer. For example, workloads with significant performance needs, security requirements, multiple backend integrations, and large data volumes are better on private clouds. Workloads requiring minimal performance, integration, or storage requirements tend to be better for public clouds and possibly SaaS solutions. This model helps explain why an application such as CRM and its business process workloads can be successfully implemented using SaaS in public clouds, whereas research and development workloads, such as engineering or industrial visualization, remain predominantly private.

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