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Cloud Applications

Oracle Fusion Applications Cloud Service: Network Bandwidth Characteristics

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INTRODUCTION

Customers implementing a Software-as-a-Service (SaaS) solution must consider network bandwidth utilization between the Cloud Service and the end-user's browser. This white paper provides a brief overview of Oracle Fusion Applications Cloud Service architectural elements that are designed to optimize network bandwidth. We use network bandwidth measurements from a sample Oracle Fusion Human Capital Management (HCM) Cloud Service and Customer Relationship Management (CM) Cloud Service environment to illustrate the optimization

ARCHITECTURE

Oracle Fusion Applications Cloud Service is designed to run efficiently while minimizing network bandwidth.

- Pages are dynamically assembled from fragments where each fragment corresponds to a user task. Oracle Fusion Applications Cloud Service performance and bandwidth are optimized based on understanding an end-user's tasks and the number of clicks required to complete those tasks. The simplified process of using page fragments to dynamically assemble a page significantly reduces page rendering time to less than one second in most cases. This design principle has vastly reduced the number of screens that a user must process and consequently helps reduce the impact on network bandwidth and improve application performance.
- Compression and Caching play an important role in optimizing network traffic and end-to-end performance of a web application. Oracle Fusion Applications Cloud Service makes use of compression features provided by the application tier (Oracle WebLogic Server) and the web-tier (Oracle HTTP Server), which help to reduce the number of TCP Packets. Oracle Fusion Applications Cloud Service caches static content and pages.
- Collaboration with content delivery network providers (such as Akamai) can also improve Internet performance and end-user response times.
  - Akamai Performance Solutions for Oracle Applications is a family of conveniently managed services aimed at addressing core Internet issues that a hardware appliance alone cannot solve. Application performance and reliability improvements are achieved through a variety of transport, route optimization, and edge network caching techniques that place cached content closer to the end-user.

SAMPLE NETWORK BANDWIDTH ON ORACLE SAAS CLOUD SERVICE

The following network bandwidth measurements were taken under concurrent user loads with various workload mixes, utilizing sample Oracle Fusion HCM and CRM cloud business flows, and represent the network traffic between the Cloud Service environment and the customer's browser.

Concurrent load was generated via the Oracle Application Test Suite. Parameterized searches and values were used to mimic multiple real-world users. Randomized think time, averaging to 30 seconds, was also used. Static content was not downloaded to the client, to realistically model client browser caching behavior. This environment did not utilize a content delivery network.

These measurements will change depending on several factors, including but not limited to, the amount and type of customer customizations and the quality of the customer's network.

End-user experience degradation can be noticeable when network latency exceeds 100 milliseconds.

Oracle does not guarantee specific bandwidth values, and the following sample measurements are provided only for general guidance. Oracle Fusion Applications Cloud Service products, such as Oracle Fusions Human Capital Management Cloud Service and Oracle Fusion Customer Relationship Management Cloud Service are based on the same UI technology and application patterns. The products have similar network bandwidth characteristics.

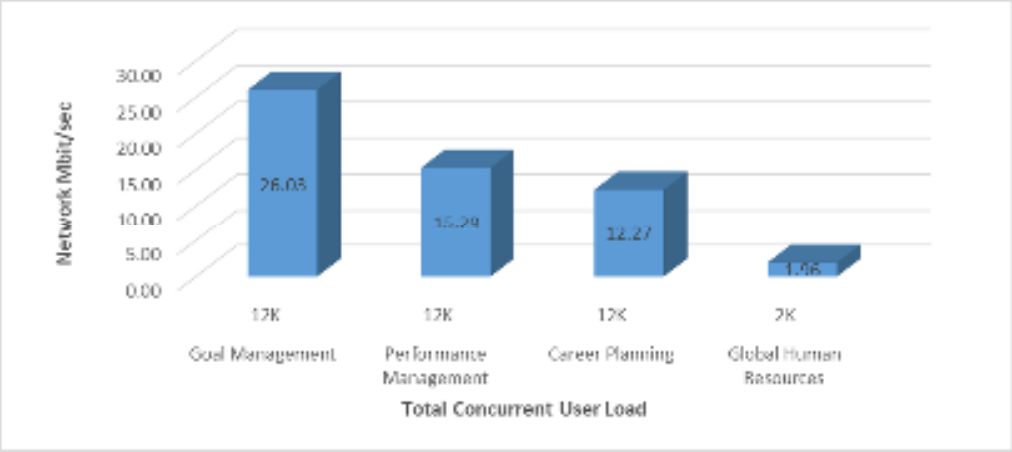

Figure 1. Network utilization generated by Oracle Fusion HCM Cloud Service business flows.

Concurrent user load, Oracle Fusion HCM Cloud Service

BUSINESS FLOW	CONCURRENT USER LOAD	AVERAGE HITS /SEC	BUSINESS FLOWS / HOUR / USER	TOTAL BUSINESS FLOWS / HOUR	NETWORK MBITS/SEC
Goal Management	12000	425	2.2	26752	26.03
Performance Management	12000	360	2.4	28639	15.29
Career Planning	12000	292	3.3	39320	12.27
Global Human Resources	2000	37	2.0	4050	1.96

Network utilization generated by Oracle Fusion CRM Cloud Service business flows

BUSINESS FLOW	CONCURRENT USER LOAD	AVERAGE HITS /SEC	BUSINESS FLOWS / HOUR / USER	TOTAL BUSINESS FLOWS / HOUR	NETWORK MBITS/SEC
Modify Opportunity	3700	135.98	3.37	12502	6.00
Customer 360	700	27.14	3.99	2793	1.12
Create Contact	700	25.84	3.06	2140	1.15
Mobile User Calls	1800	34.85	4.65	8375	1.68
Business Intelligence (BI) Analytics	100	11.60	12.78	1278	0.39

APPENDIX A

Sample Business Flow details, Oracle Fusion HCM Cloud Service

MODULE	FLOW	FLOW DESCRIPTION
Talent-Career Planning	Employee changes career statement	Employee updates career development interests
	Employee selects career of interest and views hiring manager's details	Employee reviews interest related to a career and views the hiring managers details
Talent-Performance Management	Employee completes their self-assessment	Employee provides a self-assessment rating and updates his/her goal, competency, and summary comments
	Employee adds assessment participants	Employee adds and updates participants for his/her year-end evaluation
Talent-Goal Management	Employee adds performance goals	Employee creates 5 performance goals and adds comments for his/her year-end evaluation
	HR Specialist cancels a Goal	HR specialist conducts a search and cancels a specific employee goal
	HR Specialist deletes a Goal	HR specialist conducts a search and deletes a specific employee goal
Global HR	Hire new employee	HR Specialist completes new employee hire and assign the employee to the appropriate Business Unit
	Manage employment	HR Specialist performs a search for an employee and views employee's details
	Change working hours	HR specialist performs a search form an employee and updates the employee working hours

APPENDIX B

Sample Business Flow details, Oracle Fusion CRM Cloud Service

MODULE	FLOW	FLOW DESCRIPTION
Opportunity	Modify Opportunity	Search for an Opportunity, search for a Contact in an Opportunity, and add Products to the Opportunity
Mobiles flow	Account, Contact, Activities	REST calls to search for various objects like Account, Contact, Lead, Appointment, and perform list operations on Account, Contact, Lead, Appointment Also create Account, Contact, and Lead Edit Contact, Lead, and Appointment
Customer	Customer 360	Search for an Account and add a Contact to it
	Create Contact	Search for Contact, make Contact a favorite, create a new Contact and Account and assign them a profile and team
BI	Analytics	View BI report under a sales dashboard

CONCLUSION

Network bandwidth is one consideration when implementing a SaaS solution. Oracle Fusion Applications Cloud Service provides optimized network bandwidth utilization at significant user loads.

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