Quick sizing guide for SunGard HE DegreeWorks running on HP Integrity Servers

Executive summary

This sizing guide describes a range of pre-configured solutions designed to support the SunGard HE DegreeWorks application at colleges and universities. Based on HP Integrity servers, these multi-tier solutions have been sized to meet a variety of needs, and have been benchmarked against simultaneous access by 140, 250, and 400 active students and advisors reviewing degree audits and generating "what-if" scenarios. These work loads simulate access at institutions with 5,000 to 30,000 students.

The solution sizings are based on testing carried out at the HP Partner and Technology Access Center to characterize performance in a typical DegreeWorks implementation environment.

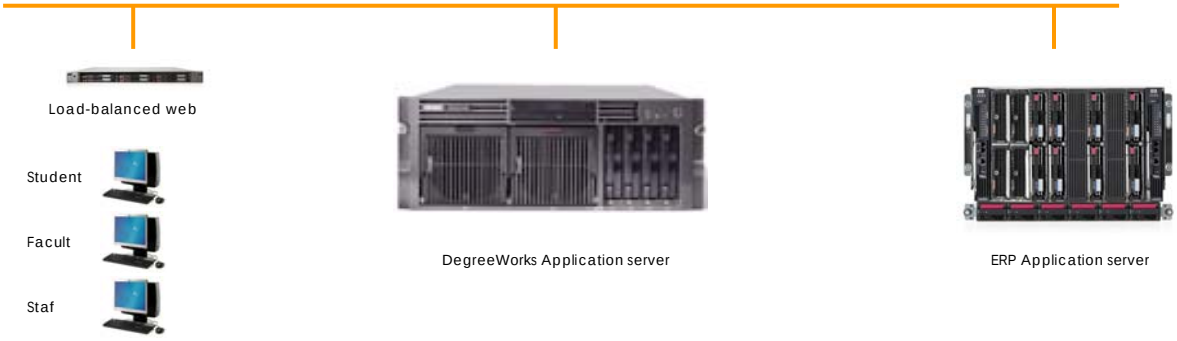
This document is directed at system integrators, IT staff, and anyone else tasked with configuring DegreeWorks on HP Integrity servers.

Solution definition

DegreeWorks is a set of powerful services providing intuitive mechanisms for guiding students through complex degree requirements found at colleges and universities. Its underlying goal is showing every student the shortest path to graduation. That advice is based on a very powerful degree auditing engine. But, DegreeWorks hides that engine from campus users, instead presenting its results – academic advice – within a set of easy-to-understand web-based advising worksheets, student educational plans, and institutional curriculum and resource planning services.

The product is multi-tiered, with the application layer typically resident on the same server as the data base layer and not on the same platform as the institution's ERP solution. The web services should be deployed with the campus portal.

Figure 1. Deployment diagram



Typically, an institution will use the web services they already have in place to deliver DegreeWorks results. This would need to be upgraded only if DegreeWorks generates significant new traffic. The ERP server is typically already in place when DegreeWorks is acquired. DegreeWorks should be installed on it's own hardware server platform.

Sizing considerations

The two critical metrics in determining DegreeWorks server sizing relates first to the amount of time a user must wait between hitting "enter" for a request and then seeing the results on their screen, and second, the number of users who are asking for a service concurrently.

In the first table below, the performance metrics are based on simulated loads of students and advisors requesting views of previously run audit worksheets (1st line) as well as requesting dynamic "what-if" audits reflecting changes in program or major (2nd line). In addition, processing batch loads of 1,000 audit transactions are simulated (3rd line). The entries in the tables are in seconds unless otherwise noted. The simulation software was Mercury LoadRunner. For the dynamic simulations, "think time" was random, ranging from 2 to 20 seconds, and the load was mixed between "view" and "what-if" as indicated. The tests were conducted on an HP Integrity rx6600 server with 1.6 GHz dual-core Intel® Itanium® 2 processors running HP-UX 11i v2 and Oracle 10g R2.

	Number of Concurrent Users: 75% View Audit and 25% What If Audit													
CPU Configuration with Memory	20	40	60	80	100	120	140	160	180	200	250	300	400	500
1 x Dual Core w/8Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 2	< 3	5	7	8	--	--
	< 2	< 2	< 2	< 2	< 3	3	4	10	18	22	30	35	--	--
	Batch of 1000 transactions processed in 4 Min 23 Sec (3.8 stu/sec)													
2 x Dual Core w/8Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 2	< 2	< 2	4	6
	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 3	< 3	< 3	5	8	18	28
	Batch of 1000 transactions processed in 2 Min 21 Sec (7.1 stu/sec)													
3 x Dual Core w/16Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 2	< 3
	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 4	< 4	5	10
	Batch of 1000 transactions processed in 1 Min 32 Sec (10.9 stu/sec)													

The performance metrics noted in the table below are based on simulated loads of students and advisors requesting only views of previously run audit worksheets.

	Number of Concurrent Users: 100% View Audit													
CPU Configuration with Memory	20	40	60	80	100	120	140	160	180	200	250	300	400	500
1 x Dual Core w/8Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 2	3	6	8
2 x Dual Core w/8Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2	< 2	< 2	< 3	4
3 x Dual Core w/8Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 3	< 4

The performance metrics noted in the table below are based on simulated loads of students and advisors requesting dynamic "what-if" audits reflecting changes in program or major.

	Number of Concurrent Users: 100% What If Audit													
CPU Configuration with Memory	20	40	60	80	100	120	140	160	180	200	250	300	400	500
1 x Dual Core w/8Gb Memory	< 2	< 2	< 2	< 3	< 5	10	15	18	--	--	--	--	--	--
2 x Dual Core w/8Gb Memory	< 2	< 2	< 2	< 2	< 2	< 2	3	4	7	9	16	21	--	--
3 x Dual Core w/8Gb Memory	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 2	2	6	10

Important
This guide provides a general sizing overview. This is not to be used as a final sizing recommendation. There are many customer specific details that can impact the application of the general sizing information presented in this guide.

HP recommends proof-of-concept testing in a non-production environment using the actual target application as a matter of best practice for all application deployments. Testing the actual target application in a test/staging environment identical to, but isolated from, the production environment is the most effective way to estimate systems behavior.

Suggested configurations

In general, a 5 second response time has been used to define acceptable system responsiveness to transaction events in the table below. This table provides break points based on the number of concurrent users, with 75% of the users looking at audits on file, and 25% running new audits.

Table 1. Server Performance Guideline

Number of Concurrent Users	Hardware Configuration
Up to 140 users	1 x Dual Core w/8Gb Memory
Up to 250 users	2 x Dual Core w/8Gb Memory
Up to 400 users	3 x Dual Core w/16Gb Memory

For more information

DegreeWorks Product Information, www.sungardhe.com

HP Services, www.hp.com/hps

HP Servers, www.hp.com/go/servers

HP Storage, www.hp.com/go/storage

HP Solution Centers, www.hp.com/go/solutioncenters

HP ActiveAnswers, www.hp.com/go/activeanswers

HP Enterprise Configurator, www.hp.com/products/configurator

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