

## 2Q04: Semiconductors, Hardware and Systems Forecast Scenarios

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Semiconductor revenue will grow 25 percent in 2004 because of improving end-user application demand and nearly 100 percent semiconductor manufacturing capacity utilization; client platforms revenue will grow 8 percent.

## ANALYSIS

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### Global Economy and IT Spending Scenarios

Gartner Dataquest has updated its near-term scenarios for the U.S. and global economies to better reflect its conviction that world economic growth will accelerate despite several outstanding risks.

#### Most Likely Scenario

This scenario envisages the U.S. economy experiencing respectable growth, with the gross domestic product (GDP) averaging 4.5 percent growth during the next 12 months. China's economy cools but continues to buoy the global recovery. Japan and the eurozone improve but add little to global growth. Corporate IT spending accelerates in the wake of robust U.S and China-led global growth. Improving consumer fundamentals support robust household spending on innovative digital content products and services. Threats to this scenario include geopolitical uncertainty, persistently high oil prices and the possibility of a significant Chinese economic crisis.

#### Best-Case Scenario

Global growth is more vigorous, thanks to exceptionally strong growth in the United States and continued high-flying growth in China. This is reinforced by stronger domestic-driven growth in Japan and the eurozone to the point that these regions actually make autonomous contributions to global growth. Stronger global growth propels stronger corporate and consumer IT spending. Thanks to increased confidence and accelerated profits as a result of faster economic growth, corporate IT spending sharply quickens and leads global GDP growth.

#### Worst-Case Scenario

The global economy reverses course and decelerates when mounting geopolitical uncertainty and persistently high oil prices land a powerful double blow to world economic activity. The impact of this is compounded by a serious economic crisis in China. In the United States, corporate and consumer IT spending fall victim to deteriorating economic conditions. Both pull back, possibly sharply, in synch with a global economy suddenly deprived of its chief growth locomotives.

The features in this Spotlight describe how these three scenarios will affect different segments of the computing platforms and semiconductor markets. Table 1 shows the most likely sequential revenue growth rates through 2005 for each of the segments.

**Table 1. Computing Platforms and Semiconductor Sequential Revenue Growth Rates, Most Likely Scenario 2003-2005 (Percent)**

	2Q03	3Q03	4Q03	2003	
<b>Client Platforms Market Segments</b>					
PCs	-6.2	10.4	14	4.7	
Servers	-0.7	3.6	20.6	4.6	
PDA's	-10.4	6.4	33.3	-4.4	
Hard Disk Drives	-0.3	14.4	9.6	12.2	
RAID Storage	5.8	1.7	12.2	-1.7	
<b>Semiconductor Market Segments</b>					
DRAM	-0.2	33.1	6.6	13.2	
Wafer Fab Equipment	-25.4	33	10.2	3.5	
Semiconductor	1.8	10.2	9.6	14.1	
Semiconductor Capital Equipment	-21	30	11.7	10.3	
Wired Communications	8.9	6.2	7.2	6	
EDA	-	-	-	-	
Data Processing	-	-	-	-	
	1Q04	2Q04	3Q04	4Q04	2004
<b>Client Platforms Market Segments</b>					
PCs	-8.9	-5	11	14.6	8.9
Servers	-14.1	-1.3	5.4	12.3	4.8
PDA's	-14.5	-3.7	-4.4	28.1	7.2
Hard Disk Drives	-11.5	-3.3	3.8	8.4	2.3
RAID Storage	-17	4.8	2.8	13.4	0.3
<b>Semiconductor Market Segments</b>					
DRAM	6.5	13.9	2.9	18	49.2
Wafer Fab Equipment	25.1	4.4	0	-4.1	46
Semiconductor	1	5.6	8.6	3.1	24.7
Semiconductor Capital Equipment	20.7	6.1	3.1	-1.7	47.7
Wired Communications	2.4	3.7	3.6	6.7	20.5
EDA	-	-	-	-	11.8
Data Processing	NA	5.6	8	14.9	NA
	1Q05	2Q05	3Q05	4Q05	2005
<b>Client Platforms Market Segments</b>					
PCs	-10.4	-5.5	8.1	13.1	5.9
Servers	-11.6	-2.9	7.2	13.8	3.3
PDA's	-24.4	-4.7	4.8	28.3	-7.1
Hard Disk Drives	-7.5	-2.5	6.9	9	3
RAID Storage	-15.7	5.3	2.5	13.1	3.2
<b>Semiconductor Market Segments</b>					
DRAM	0.5	-4.9	-9.3	13.8	12.4
Wafer Fab Equipment	7.5	9.2	13.8	9.8	23.7
Semiconductor	-1.8	3.6	7.4	3.2	13.8
Semiconductor Capital Equipment	9.1	7.8	12.7	8.6	27.9
Wired Communications	-2.5	5.9	2.8	5.8	12.8
EDA	-	-	-	-	17.9
Data Processing	-7.5	0	3.2	7.5	11.3

NA = Not applicable

Source: Gartner Dataquest (June 2004)

Table 2 gives the 2004 revenue forecasts for the computing platforms segments for the three scenarios.

**Table 2. Computing Platforms Revenue Forecast Scenarios by Segment, 2004 (Billions of Dollars)**

	Worst Case		Most Likely		Best Case	
	Revenue	Growth (%)	Revenue	Growth (%)	Revenue	Growth (%)
PCs	208.1	6.5	212.9	8.9	217.0	11.0
Servers	45.9	-0.4	48.3	4.8	50.8	10.1
PDA's	3.6	-2.9	4.0	7.2	4.3	15.7
<b>Total</b>	<b>257.6</b>	<b>5.0</b>	<b>265.2</b>	<b>8.1</b>	<b>272.0</b>	<b>10.9</b>
Hard Disk Drives	20.3	-7.3	22.4	2.3	24.0	9.7
RAID Storage	19.5	-2.8	20.1	0.3	20.6	3.0

Source: Gartner Dataquest (June 2004)

## Computing Platforms Market

### PCs — 1Q04 Results on Track for Growth

Gartner Dataquest has raised its expectations for 2004 global PC shipments. Overall shipments in the first quarter of 2004 were just 1 percent higher than in our March forecast. Still, stronger-than-expected growth in Asia/Pacific and our growing confidence in the recovering U.S. market give us reason to increase our forecast, despite some concerns for Western Europe.

### Servers — 2004 Outlook Increased

The most likely scenario for 2004 server revenue has been increased more than 4 percentage points compared with the last update to this forecast. The server market is most likely to show low-single-digit revenue gains for 2005. Unit gains will probably be stronger, but the push for lower-cost replacement technology will help to keep overall average selling prices (ASPs) down.

### PDA's — 2004 Expectations Improved Slightly

Better-than-expected results from the first quarter of 2004 and a slowly improving economic outlook have caused us to raise our PDA forecast for 2004 to 11.7 million units, up about 2 percent from 2003. Worldwide PDA shipments will decline 3.3 percent in 2005 to 11.35 million units and PDA revenue will fall 7 percent to \$3.68 billion.

### Hard Disk Drives — Demand Strong but Overbuild Destabilizes Pricing

Underlying demand for hard disk drive (HDD) products remains solid. First-quarter demand for HDDs was up approximately 15 percent year over year (given the large numbers involved, this is a solid increase), but the industry built to a 20 percent annual increase, creating adverse conditions for stable pricing. Although consolidation and contention will define near-term market dynamics, revenue and shipment growth opportunities will improve.

### RAID — Modest Downward Adjustments

Relative to the March 2004 forecast, Gartner Dataquest has made modest downward adjustments to the external controller-based disk storage 2004, 2005 and 2006 forecasts. The accelerated transition of integrated network-attached storage (NAS) storage devices to NAS gateways attached to a SAN infrastructure in the high-end NAS market is accountable for this reduction. 2004, 2005 and 2006 host-based redundant array of independent disks (RAID) storage vendor revenue remains unchanged from the March 2004 most likely forecast.

## Semiconductor Market

## Supply Remains Tight Into 2005 Because of Manufacturing Capacity Issues

For this update, we have made no substantive changes to our semiconductor market forecast guidance for 2004 or 2005. As market conditions continue to incrementally improve, quarterly sequential growth in the first quarter of 2004 came in at 1 percent, which was toward the best-case scenario outlined in the first quarter of 2004 forecast update. Therefore, forecast growth has been marginally increased from 23 percent to 25 percent for 2004 and from 13 percent to 14 percent for 2005.

Semiconductor revenue will grow by more than 20 percent in 2004, and continually improving market conditions suggest that revenue growth is likely to be closer to 30 percent than to 20 percent.

Manufacturing capacity utilization remains close to 100 percent, but semiconductor vendors will continue their policy of capital spending restraint. As demand continues to improve incrementally through 2004, supply is expected to remain tight into 2005.

At some point, however, it is inevitable that the industry will overinvest in manufacturing capacity — creating the next industry downcycle. Our most likely scenario suggests that capital spending will accelerate in 2005, with the first signs of oversupply hitting the market during the second half of next year. The onset of oversupply will mean ASPs and, for this reason, revenue growth will be limited to percentages in the midteens in 2005 (see Table 3).

**Table 3. Worldwide Semiconductor Market Revenue Forecast Scenarios, 2002-2005 (Billions of Dollars)**

	Revenue 2002	Growth (%) 2002	Revenue 2003	Growth (%) 2003	Revenue 2004	Growth (%) 2004	Revenue 2005	Growth (%) 2005
Best Case	155.4	1.4	177.2	14.1	234.5	32.3	285.9	21.9
Most Likely Case	155.4	1.4	177.2	14.1	220.9	24.7	251.4	13.8
Worst Case	155.4	1.4	177.2	14.1	208.3	17.5	218.2	4.8

Source: Gartner Dataquest (June 2004)

## Semiconductor Equipment — Outlook Improves

Capital equipment spending surged in the first quarter of 2004, signaling the start of a strong year. Gartner Dataquest estimates leading wafer fab utilization was at 98 percent at the end of the first quarter of 2004 and will remain in that range through mid-2005, resulting in a strong demand for equipment in 2004. Dominated by wafer fab equipment sales, quarterly equipment revenue will exhibit strong sequential growth in the first two quarters of 2004, then hold roughly constant through the remainder of the year.

## EDA — Outlook Lowered Slightly

Electronic design automation's (EDA's) expected market growth in the near term has been lowered slightly, at 11.8 percent for 2004 and 17.9 percent for 2005, because of continued customer-spending cautiousness. Delayed availability of the new crop of electronic system-level tools, and mainstream users' opting to employ a register transfer level handoff model, has tempered the EDA market's resurgence.

## DRAM — Market Outlook Increased Slightly

Stronger revenue in the first quarter of 2004 and the prospect of higher ASPs through the year have led to 2004 revenue forecast being raised 3.6 percent to \$26.1 billion for the dynamic random-access memory (DRAM) market. Revenue growth for the year stands at 49.2 percent vs. our previous forecast of 44.4 percent.

The revenue forecast for 2005 has also improved slightly as we have increased our pricing assumptions because of a better outlook for the supply-and-demand environment in 2005. Revenue in 2005 will reach \$29.4 billion, an increase of 12.4 percent compared with 2004. This compares with our previous forecast of 9.7 percent growth in 2005.

### **Wired Communications — Growth in 2004 Raised Slightly**

Revenue growth in the wired communications semiconductor market in 2003 was revised to 6 percent as a result of our market share study. Revenue will grow 21 percent in 2004 and 13 percent in 2005 (vs. 9 percent, 18 percent and 13 percent, respectively, in the previous forecast). The wired communications semiconductor market has been slowly recovering since early 2003 and has gained strength since the last forecast update. However, it is projected to underperform the semiconductor industry as a whole in 2004.

### **Data Processing — Most Likely Case Raised Slightly**

Financial releases by publicly traded suppliers reveal the market met projections made in the first quarter of 2004. Positive market changes suggest continued improvements throughout 2004. On an annual basis, the most likely 2004 scenario was raised 1.6 percent and the 2005 scenario was raised 2 percent.

### **Features**

#### **Economic Outlook**

"Global Economy Gains Steam in 2Q04 Scenarios" — U.S. and global economic growth will accelerate, despite several risks. **By George Shiffler III**

#### **Hardware and Systems**

"2Q04 Update: PC Forecast Scenarios, 2004-2005" — PC shipments will increase 13.6 percent in 2004 and 9.8 percent in 2005. **By Kiyomi Yamada, George Shiffler III and Charles Smulders**

"2Q04 Update: Global Server Forecast Scenarios, 2003-2005" — Worldwide server revenue will grow in the low single digits in 2004 and 2005. **By Jeffrey Hewitt**

"2Q04 Update: PDA Forecast Scenarios, 2004-2005" — PDA shipments for 2004 will total 11.7 million units, thanks to better-than-expected results from the first quarter of 2004 and a slowly improving economic outlook. **By Todd Kort, Roberta Cozza, Lillian Tay, Kanae Maita and Luis Anavitarte**

"2Q04 Update: Global HDD Forecast, 2002-2005" — Underlying demand for hard disk drive products remains solid. **By John Monroe**

"2Q04 Update: Global RAID Disk Storage Forecast, 2004-2006" — Our host-based redundant array of independent disks storage vendor revenue forecast for 2004, 2005 and 2006 remains unchanged. **By Roger W Cox**

#### **Semiconductors**

"2Q04 Update: Global Semiconductor Forecast Scenarios" — Semiconductor market conditions are improving, in line with our most likely forecast scenario. **By Richard Gordon**

"2Q04 Update: Semiconductor Capital and Equipment Spending" — Capital equipment spending surged in the first quarter of 2004, signaling the start of a strong year. **By Bob Johnson, Mark Stromberg, Jim Walker and Laurie Balch**

"2Q04 Update: EDA Global Forecast, 2004-2005" — Electronic design automation market revenue is growing again, despite lackluster results in 2003. **By Laurie Balch**

"DRAM Forecast, 2Q04: Recovery on Track" — We have raised our 2004 revenue forecast for the dynamic random-access memory market because of stronger revenue in the first quarter of 2004 and the prospect of higher average selling prices. **By Andrew Norwood**

"2Q04 Update: Wired Communications Semiconductor Forecast" — We have boosted the wired communications semiconductor market growth forecast for 2004 to 20 percent from 18 percent in our earlier forecast. **By Peter Middleton**

"2Q04 Update: Data Processing Semiconductor Forecast, 2004-2005" — Positive market changes suggest continued improvements throughout 2004. **By Joseph Byrne**

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