

**PROSPECTUS SUPPLEMENT  
(TO PROSPECTUS DATED AUGUST 19, 2004)**

**\$125,000,000**

**Mercury Computer Systems, Inc.**

**2.00% Convertible Senior Notes due 2024 and  
the Common Stock Issuable upon Conversion of the Notes**

This document supplements the prospectus dated August 19, 2004, relating to the resale by selling securityholders, and their transferees, pledges, donees and successors, of 2.00% Convertible Senior Notes due 2024 and the shares of common stock issuable upon conversion of the notes. This document should be read in conjunction with the prospectus, as previously supplemented by the prospectus supplement dated September 20, 2004.

The following table supplements information with respect to the selling securityholders and the respective principal amounts of notes and shares of common stock that may be offered by each selling securityholder under the prospectus, as supplemented. The table lists an additional selling securityholder for the table on pages 44-47 of the prospectus, as supplemented. The information is based on information that has been provided to us by or on behalf of the selling securityholder.

Name	Principal Amount of Notes Beneficially Owned that May Be Sold(1)	Percentage of Notes Outstanding	Number of Shares of Common Stock Issuable Upon Conversion of the Notes that May Be Sold(2)(3)
GLG Market Neutral Fund(4)	17,600,000	14.08%	582,202

- (1) Although the total principal amount held by selling securityholders listed is more than \$125,000,000, the maximum principal amount of notes that may be sold under the prospectus, as supplemented from time to time, will not exceed \$125,000,000.
- (2) Assumes conversion of all of the holder's notes at the initial conversion rate of 33.0797 shares per \$1,000 principal amount of the notes (representing an initial conversion price of approximately \$30.23 per share of common stock). However, this conversion price will be subject to adjustment as described in the section of the prospectus entitled "Description of Notes—Conversion of Notes." As a result, the amount of common stock issuable upon conversion of the notes may increase or decrease in the future.
- (3) The percentage of our shares of common stock that will be beneficially owned by the selling securityholder after conversion of the holder's notes will be 2.66% of our outstanding common stock. This calculation is based on 21,289,655 shares of our common stock outstanding as of August 4, 2004. In calculating this

amount, we treated as outstanding the number of shares of common stock issuable upon conversion of all of that holder's notes, but we did not assume the conversion of any other holder's notes.

- (4) GLG Market Neutral Fund is a publicly-owned company listed on the Irish Stock Exchange. GLG Partners LP, an English limited partnership, acts as the investment manager of the fund and has voting and dispositive power over the securities held by the fund. The general manager of GLG Partners LP is GLG Partners Limited, an English limited company. The shareholders of GLG Partners Limited are Noam Gottesman, Pierre Lagrange, Jonathan Green, Philippe Jabre and Lehman (Cayman) Limited, a subsidiary of Lehman Brothers, Inc., a publicly-held entity. GLG Partners LP, GLG Partners Limited, Noam Gottesman, Pierre Lagrange, Jonathan Green, Philippe Jabre and Lehman (Cayman) Limited disclaim beneficial ownership of the securities held by the fund, except for their pecuniary interest therein.

**This prospectus supplement is not complete without the prospectus dated August 19, 2004 and we have not authorized anyone to deliver or use this prospectus supplement without the prospectus, as supplemented from time to time.**

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The date of this prospectus supplement is November 19, 2004.

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