Press contacts:
Angela Hesse
Cisco Systems
+44 (0)208 824 4478
ahesse@cisco.com

Nick Daines / Debbie Leah
Insight Marketing & Communications
+44 (0)1625 500800
ndaines@insightmkt.com / dleah@insightmkt.com

Cisco Globally Resilient IP Enables Network-wide Resilience

San Jose, Calif — May 14, 2002 — Cisco Systems, Inc., (NASDAQ: CSCO) the worldwide leader in networking for the Internet, today announces Cisco Globally Resilient IP for highly available networks. Delivered in Cisco IOS® software, Cisco Globally Resilient IP is a comprehensive portfolio of new, standards-based technologies including Nonstop Forwarding (NSF), Stateful Switchover (SSO) and Multiprotocol Label Switching (MPLS) Fast Reroute. The unique features NSF and SSO create the ability for Cisco platforms with redundant route processors to enhance nonstop operations for zero packet loss—an industry first. Cisco Globally Resilient IP provides the industry's most robust network support for business-critical applications like financial transactions and manufacturing. With resilient IP, network hardware and software combine to improve recovery from network disruptions, creating fault transparency to the network application, user or subscriber.

"Miercom testing validated that Cisco Nonstop Forwarding with Stateful Switchover resulted in zero packet loss on the Cisco 12000 Series Internet Router during a route processor switchover," explains Rob Smithers, president, Miercom. "Cisco Globally Resilient IP enables the industry's fastest time-to-recovery for networks. Large IP networks with Cisco's solution can now recover from network faults faster than ever before."

The resulting reduction in service interruptions to critical business applications benefits both enterprises and service providers. This increased level of network-wide

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resilience reduces operational costs and confirms that IP can meet the needs of such emerging applications as telephony, network attached storage, and real-time video. With Cisco Globally Resilient IP, service providers can offer service level agreements (SLAs) based on the improved network availability now enabled, thereby increasing their revenues for services.

"One of the most critical issues in network evolution is the ongoing development of IP-based multiservice networks," says Tim Smith, vice president, Public Network Infrastructure for Gartner/Dataquest. "Converged IP networks require capabilities that optimize graceful recovery from failures and provide robust quality-of-service capabilities."

"Today achieving the high availability topology and platform necessary to provide a carrier-grade network requires an ongoing significant engineering effort," states Joe Fusco, product manager, Private IP Network Services at Infonet. "Cisco Globally Resilient IP appears to address the next step in the evolution of IP network quality by providing protocol-level resilience and fully assured packet delivery. This certainly addresses the direction of Infonet and we look forward to evolving towards Cisco Globally Resilient IP as it is made available and deployable in our network."

Dimensions of Network Resilience

Cisco's Globally Resilient IP represents innovation in IP across multiple technology areas. The portfolio of technologies can be deployed network wide at the enterprise backbone, enterprise premise edge, service provider edge and/or the service provider core. Cisco Globally Resilient IP comprises four dimensions of network resilience— *Resilient Routing, Resilient Connectivity, Resilient MPLS and Resilient IP Services* — which combine to offer the industry's broadest support for highly available networks.

"The goal of Cisco Globally Resilient IP is to enable carrier-grade reliability across an IP network, allowing customers to take advantage of the benefits of running their business on IP," says Sangeeta Anand, vice president, Product Marketing for Cisco's Internet Technologies Division. "This means extending availability beyond the traditional focus on *platforms* and best *practices* to encompass the end-to-end network, achieved by architecting greater resiliency into the *protocols*."

Resilient Routing includes enhancements that deliver best-in-class convergence times for unicast and multicast IP routing. The NSF and SSO features combine to enable continuous packet forwarding in the event of route processor interruptions by continuing to forward packets on the last-known routes. Neighboring routers do not have to update their routing tables, resulting in increased network stability. Resilient Connectivity extends stateful failover to essential Layer 2 connection information for fast recovery in the event of a failure.

For service provider MPLS backbones, the third dimension Resilient MPLS, incorporates Fast Reroute traffic engineering. Fast Reroute guards against link or router failures and helps enable recovery in less than 50 milliseconds. IP Services resilience maintains session state for key protocols such as IPsec and Network Address Translation across redundant routers, delivering fault tolerance for real-time applications using these protocols in the event of a router failure. A Cisco innovation, Gateway Load Balancing Protocol load balances IP traffic across multiple routers in the enterprise backbone, thus improving network efficiency. Resilience and throughput are increased as the enterprise is no longer required to maintain standby routers in back-up mode with unutilized WAN links.

Availability

Cisco Globally Resilient IP functionality is available for Cisco 12000, 10000 and 7500 Series Internet Routers as a standard Cisco IOS software upgrade. Cisco will deliver additional resilient IP technologies and expand support across Cisco's comprehensive platform portfolio. Customers interested in Cisco Globally Resilient IP functionality should contact their local sales office. Additional information can be found at **www.cisco.com/go/grip.**

About Cisco Systems

Cisco Systems, Inc. (NASDAQ:CSCO) is the worldwide leader in networking for the Internet. News and information are available at www.cisco.com.

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