BSNL and Ciena Join Forces to Prepare for 5G in India

_Ciena’s 5G Network Solutions add scale and network automation to support a new age of mobile connectivity in BSNL_

NEW DELHI, India – February 5, 2019 – Bharat Sanchar Nigam Limited (BSNL), a leading telecom operator in India, today has signed a Memorandum of Understanding (MoU) with Ciena to prepare its network for the impending evolution toward 5G.

BSNL, in support of the Digital India vision by Hon’ble Prime Minister Shri Narender Modi and recent strategic telecom plan from India’s Department of Telecommunications, is working to conduct field trials to roll out 5G by 2020. The network operator is collaborating closely with Original Equipment Manufacturers (OEMs) and technology partners to showcase a strong 5G ecosystem that enables innovation for new use cases and business models. The 5G trials are expected to take place in any of the preferred Urban Metro Area.

To support transport delivery for these 5G trials, the parties will explore Ciena providing next generation Converged Packet Optical and Packet Networking platforms as well as Blue Planet® Intelligent Automation software. Specifically, Ciena and BSNL intend to jointly evaluate front haul, mid haul and backhaul transport-based use cases and scenarios to address resiliency requirements and latency concerns. The collaboration, celebrated at a signing ceremony in New Delhi, signifies the next step toward adoption of 5G by operators in the government sector and beyond.

BSNL’s Chairman and Managing Director, Shri Anupam Shrivastava said: “5G represents an enormous opportunity in India and BSNL has made a significant step forward to bring this innovation to market. We expect that these trials will show the true benefit of 5G which promises to deliver speeds of up to 20 gigabits per second, as much as 30 times faster than 4G.”
Ciena India’s Vice President and General Manager, Ryan Perera said: "Conducting field trials in collaboration with BSNL will mark an important step in making 5G a reality in India. Ciena’s unmatched leadership in packet, optical and software-enabled technologies help to create more adaptive networks and supports the adoption of 5G."

Ciena currently provides Converged Packet Optical and Ethernet solutions to leading Indian telecom operators. In addition, it supplies equipment to the Indian government to build core transport and switching backbone networks for India's armed forces. **Ciena’s 5G Network Solutions** are open and designed to provide the scale and automation that operators like BSNL need to deliver a superior end-to-end user experience. Ciena’s 5G solutions also leverage **Blue Planet Manage, Control and Plan** and **Multi-Domain Service Orchestration** software that provides enhanced network orchestration, analytics, and end-to-end SDN-based network control and automation.

**ABOUT BHARAT SANCHAR NIGAM LIMITED**

Bharat Sanchar Nigam Ltd. was incorporated on 15th September 2000. It is one of the largest & leading public sector units providing comprehensive range of telecom services in India. BSNL has installed Quality Telecom Network in the country & now focusing on improving it, expanding the network, introducing new telecom services with ICT applications in villages & winning customer's confidence. BSNL is the only service provider, making focused efforts & planned initiatives to bridge the rural-urban digital divide in ICT sector. In fact BSNL has its reach with its wide network giving services in every nook & corner of the country except New Delhi & Mumbai. Whether it is inaccessible areas of Siachen glacier or North-Eastern regions of the country, BSNL serves its customers with a wide bouquet of telecom services namely Wireline, CDMA mobile, GSM mobile,3G, Internet, Broadband, Carrier service, MPLS-VPN, VSAT, VoIP, IN Services, FTTH, etc. BSNL is the leading provider of mobile and wireline services in India with 113 million mobile subscribers and 12.56 million wireline customers. It is committed to delivering exceptional customer service and innovative solutions in every corner of India. BSNL is continually evolving its mobile offering with services that deliver a high-quality mobile experience. BSNL is the leading 3G operator in India and has the widest 3G Network covering more than 1700 towns and cities in every nook & corner of the country. Recently, BSNL has also started 4G Mobile services to its Customers.

**About Ciena**
Ciena (NYSE: CIEN) is a networking systems, services and software company. We provide solutions that help our clients create the Adaptive Network™ in response to the constantly changing demands of their users. By delivering best-in-class networking technology through high-touch consultative relationships, we build the world’s most agile networks with automation, openness and scale. For updates on Ciena, follow us on Twitter @Ciena, LinkedIn, the Ciena Insights blog, or visit www.ciena.com.

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You are encouraged to review the Investors section of our website, where we routinely post press releases, SEC filings, recent news, financial results, and other announcements. From time to time we exclusively post material information to this website along with other disclosure channels that we use. This press release contains certain forward-looking statements that are based on our current expectations, forecasts, information and assumptions. These statements involve inherent risks and uncertainties. Actual results or outcomes may differ materially from those stated or implied, because of risks and uncertainties, including those detailed in our most recent annual and quarterly reports filed with the SEC. Forward-looking statements include statements regarding our expectations, beliefs, intentions or strategies and can be identified by words such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "should," "will," and "would" or similar words. Ciena assumes no obligation to update the information included in this press release, whether as a result of new information, future events or otherwise.

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