As filed with the Securities and Exchange Commission on May 14, 2003.

Registration No. 333-

# SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

## FORM S-8

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

## SONUS NETWORKS, INC.

(Exact Name of Registrant as Specified in Its Charter)

DELAWARE

(State or Other Jurisdiction of Incorporation or Organization)

04-3387074

(I.R.S. Employer Identification No.)

**5 Carlisle Road, Westford, Massachusetts** (Address of Principal Executive Offices) **01886** (Zip Code)

Amended and Restated 1997 Stock Incentive Plan 2000 Employee Stock Purchase Plan (Full Title of the Plan)

Hassan M. Ahmed

President and Chief Executive Officer Sonus Networks, Inc. 5 Carlisle Road Westford, MA 01886 (Name and Address of Agent for Service)

(978) 692-8999

Telephone Number, Including Area Code, of Agent For Service

Copy to: Johan V. Brigham, Esq. BINGHAM DANA LLP 150 Federal Street Boston, Massachusetts 02110 (617) 951-8000

## CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Share (1)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$0.001 par value per share, to be issued under the Amended and Restated 1997 Stock Incentive Plan	30.000.000	\$3.29	\$98,700,000	\$7.984.83
Common Stock, \$0.001 par value per share, to be issued under the 2000 Employee Stock Purchase				- ,
Plan	10,000,000	\$3.29	\$32,900,000	\$2,661.61
Total Fee to be Paid by Registrant:				\$10,646.44

Estimated solely for the purpose of computing the registration fee pursuant to Rule 457(h) under the Securities Act of 1933, as amended, based on the average of the high and low prices of the Registrant's Common Stock, \$0.001 par value per share, reported by the Nasdaq National Market on May 8, 2003.

### EXPLANATORY NOTE

On August 9, 2000, we filed a Registration Statement on Form S-8 (File No. 333-32206) (referred to in this document as, the "First Registration Statement") that registered under the Securities Act of 1933, as amended (the "Securities Act"), an aggregate of 12,388,152 shares of common stock, par value \$0.001 per share (the "Common Stock"), issuable by us under our Amended and Restated 1997 Stock Incentive Plan (the "1997 Plan") and 2,154,708 shares of Common Stock issuable by us under our 2000 Employee Stock Purchase Plan (the "2000 Plan"). On February 2, 2001, we filed a subsequent Registration Statement on Form S-8 (File No. 333-54932) (referred to in this document as, the "Second Registration Statement") that registered an additional 10,862,349 shares of Common Stock to issuable by us under the 1997 Plan.

This Registration Statement on Form S-8 has been prepared and filed pursuant to and in accordance with the requirements of General Instruction E to Form S-8 for the purpose of effecting the registration under the Securities Act of an additional 30,000,000 shares of Common Stock issuable upon the exercise of stock options grants, or to be granted, under the 1997 Plan and 10,000,000 shares of Common Stock issuable pursuant to the 2000 Plan, at any time or from time to time after the date hereof under each plan. Pursuant to General Instruction E to Form S-8, we hereby incorporate herein by reference the contents of the First Registration Statement and the Second Registration Statement.

We also hereby incorporate by reference into this Registration Statement the following documents filed with the Securities and Exchange Commission:

DOCUMENTS	PERIOD
The description of our Common Stock, \$0.001 par value per share, contained in our Registration Statement on Form 8-A pursuant to Section 12(g) of the Securities Exchange Act	Filed April 5, 2000
Annual Report on Form 10-K	Year ended, December 31, 2002
Quarterly Report on Form 10-Q	Quarter ended, March 31, 2003
Current Reports on Form 8-K	Filed January 22, 2003, April 9, 2003 and April 22, 2003

In addition, all documents filed pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act subsequent to the date of this Registration Statement and prior to the filing of a post-effective amendment which indicates that all securities registered hereby have been sold or which deregisters all of such securities then remaining unsold shall be incorporated by reference into this Registration Statement as of the filing date of each.

You may request a copy of these filings at no cost (other than exhibits unless those exhibits are specifically incorporated by reference herein) by writing or telephoning us at the following address:

Sonus Networks, Inc. 5 Carlisle Road Westford, MA 01886 Attention: Stephen J. Nill, Vice President of Finance and Administration and Chief Financial Officer Tel.: (978) 692-8999

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### Item 5. Interests Of Named Experts And Counsel.

As of May 14, 2003, attorneys at Bingham McCutchen LLP, our outside corporate counsel, owned, in the aggregate, 76,800 shares of our Common Stock.

#### Item 8. Exhibits.

The following exhibits are filed as part of this Registration Statement:

Exhibit No.	Description of Documents
4.1	* Fourth Amended and Restated Certificate of Incorporation of the Registrant, incorporated by reference to Exhibit No. 3.1 to the Registrant's Registration Statement on Form S-1 (file No. 333-32206), filed on May 22, 2000.
4.2	* Amended and Restated By-Laws of the Registrant, incorporated by reference to Exhibit No. 3.2 to the Registrant's Registration Statement on

- Form S-1 (file No. 333-32206), filed on May 22, 2000.
- 4.3\* Amended and Restated 1997 Stock Incentive Plan, incorporated by reference to Exhibit No. 10.2 to the Registrant's Registration Statement on Form S-1 (file No. 333-32206), filed on May 22, 2000.

4.4\* 2000 Employee Stock Purchase Plan, as amended, incorporated by reference to Exhibit No. 10.3 to the Registrant's Registration Statement on Form S-1 (file No. 333-32206), filed on May 22, 2000.

- 5. Opinion of Bingham McCutchen LLP as to the legality of the securities being registered.
- 23.1 Consent of Ernst & Young LLP, independent accountants.
- 23.2 Consent of Bingham McCutchen LLP (included in Exhibit 5).
- 24 Power of Attorney (included on the signature page of this Registration Statement).

\* Previously filed and incorporated herein by reference.

Signature

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## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the Town of Westford, Commonwealth of Massachusetts, as of the 14<sup>th</sup> day of May 2003.

SONUS NETWORKS, INC.

By: /s/ HASSAN M. AHMED

Hassan M. Ahmed President and Chief Executive Officer

Title

#### POWER OF ATTORNEY

Each person whose signature appears below hereby appoints Hassan M. Ahmed, Stephen J. Nill, and each of them severally, his true and lawful attorney-infact with the authority to execute in the name of each such person, and to file with the Securities and Exchange Commission, together with any exhibits thereto and other documents therewith, any and all amendments (including without limitation post-effective amendments) to this Registration Statement on Form S-8 necessary or advisable to enable the Registrant to comply with the Securities Act of 1933, as amended, and any rules, regulations, and requirements of the Securities and Exchange Commission in respect thereof, which amendments may make such other changes in the Registration Statement as the aforesaid attorney-in-fact executing the same deems appropriate.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities indicated as of the 14th<sup>th</sup> day of May 2003.

/s/ HASSAN M. AHMED	President, Chief Executive Officer and Director (Principal Executive Officer)
Hassan M. Ahmed	•
/s/ STEPHEN J. NILL	Vice President of Finance and Administration and Chief Financial Officer (Principal Financial and Accounting Officer)
Stephen J. Nill	
	Chairman of the Board of Directors and Director
Rubin Gruber	
/s/ EDWARD T. ANDERSON	Director
Edward T. Anderson	
/s/ PAUL J. FERRI	Director
Paul J. Ferri	•
/s/ PAUL J. SEVERINO	Director
Paul J. Severino	•
/s/ ALBERT NOTINI	Director
Albert Notini	

**Exhibit Index** 

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## QuickLinks

Exhibit No.

EXPLANATORY NOTE

<u>Item 5. Interests Of Named Experts And Counsel.</u> <u>Item 8. Exhibits .</u>

<u>SIGNATURES</u> <u>POWER OF ATTORNEY</u> <u>Exhibit Index</u>

#### [Letterhead of Bingham McCutchen LLP]

May 14, 2003

Sonus Networks, Inc. 5 Carlisle Road Westford, MA 01886

#### Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel for Sonus Networks, Inc., a Delaware corporation (the "*Company*"), in connection with the preparation of the Company's Registration Statement on Form S-8 proposed to be filed with the Securities and Exchange Commission on or about May 14, 2003 (the "*Registration Statement*").

The Registration Statement covers the registration of 40,000,000 shares of common stock, \$0.001 par value per share, of the Company (the "*Shares*"), which are issuable by the Company pursuant to its Amended and Restated 1997 Stock Incentive Plan or 2000 Employee Stock Purchase Plan (the "*Plans*").

We have reviewed the corporate proceedings of the Company with respect to the authorization of the Plans and the issuance of the Shares thereunder. We have also examined and relied upon originals or copies of such corporate records, instruments, agreements or other documents of the Company, and certificates of officers of the Company as to certain factual matters, as we have deemed necessary or appropriate as a basis for the opinions hereinafter expressed. In our examination, we have assumed the genuineness of all signatures, the conformity to the originals of all documents reviewed by us as copies, the authenticity and completeness of all original documents reviewed by us in original or copy form and the legal competence of each individual executing any document.

This opinion is limited solely to the Delaware General Corporation Law, as applied by courts located in Delaware, the applicable provisions of the Delaware Constitution and the reported judicial decisions interpreting those laws.

Based upon and subject to the foregoing, we are of the opinion that the Shares, when issued and delivered upon the exercise of options or awards pursuant to the Plans and against the payment of the purchase price therefor, as specified in such Plans or documents governing such awards, will be validly issued, fully paid and non-assessable.

Very truly yours,

/s/ Bingham McCutchen LLP

Bingham McCutchen LLP

## QuickLinks

Exhibit 5

## CONSENT OF INDEPENDENT AUDITORS

We consent to the incorporation by reference in the Registration Statement on Form S-8 pertaining to the Amended and Restated 1997 Incentive Plan and the 2000 Employee Stock Purchase Plan of our report dated January 21, 2003 (except with respect to the matter discussed in Note 19 as to which the date is March 14, 2003), with respect to the consolidated financial statements of Sonus Networks, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2002, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts May 14, 2003

QuickLinks

Exhibit 23.1