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AETHER SYSTEMS INC
Form S-3
February 23, 2001

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AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON FEBRUARY 23, 2001.
REGISTRATION NO. 333-

SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM S-3

REGISTRATION STATEMENT UNDER THE
SECURITIES ACT OF 1933

AETHER SYSTEMS, INC.
(Exact Name of Registrant as Specified in Its Charter)

DELAWARE
(State or Other Jurisdiction
of Incorporation or Organization)

52-2186634
(I.R.S. Employer
Identification No.)

11460 CRONRIDGE DRIVE
OWINGS MILLS, MARYLAND 21117
(410) 654-6400
(Address, Including Zip Code, and Telephone Number, Including Area Code, of
Registrant's Principal Executive Offices)

DAVID S. OROS
CHAIRMAN AND CHIEF EXECUTIVE OFFICER
11460 CRONRIDGE DRIVE
OWINGS MILLS, MARYLAND 21117
(410) 654-6400
(Name, Address, Including Zip Code, and Telephone Number, Including Area Code,
of Agent for Service)

with a copy to:

MARK A. DEWIRE, ESQ.
ROGER J. PATTERSON, ESQ.
WILMER, CUTLER & PICKERING
2445 M STREET, N.W.
WASHINGTON, D.C. 20037
(202) 663-6000

APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC: As soon as
practicable after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered

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pursuant to dividend or interest reinvestment plans, please check the following box. []

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. [X]

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box. []

CALCULATION OF REGISTRATION FEE

TITLE OF CLASS OF SECURITIES TO BE REGISTERED	AMOUNT TO BE REGISTERED	PROPOSED MAXIMUM AGGREGATE PRICE PER SHARE (1)
Common Stock.....	2,944,960 (2)	\$25.79

TITLE OF CLASS OF SECURITIES TO BE REGISTERED	AMOUNT OF REGISTRATION FEE
Common Stock.....	\$18,988

- (1) Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act of 1933. The price per share is based on the average for the high and low prices of a share of Aether common stock quoted on the Nasdaq National Market on February 21, 2001.
- (2) All of the shares of common stock offered hereby are being sold for the accounts of selling stockholders named herein. See "Selling Stockholders" herein.

 THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(a) OF THE SECURITIES ACT OF 1933 OR UNTIL THIS REGISTRATION STATEMENT SHALL BECOME

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EFFECTIVE ON SUCH DATE AS THE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(a), MAY DETERMINE.

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The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any State where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS DATED FEBRUARY 23, 2001

PROSPECTUS

2,944,960 SHARES

[AETHER LOGO]

COMMON STOCK

This prospectus relates to 2,944,960 shares of common stock, \$.01 par value per share, of Aether Systems, Inc., which may be offered from time to time by the selling stockholders named herein or their pledgees, donees, transferees or other successors in interest in transactions on the Nasdaq National Market, in negotiated transactions or otherwise, at fixed prices prevailing at the time of sale, at negotiated prices, or without consideration, or by any other legally available means. We are registering the sale of the common stock pursuant to the terms of a registration rights agreement with the selling stockholders. The registration of the common stock does not necessarily mean that any of the shares will be offered or sold by the selling stockholders.

The selling stockholders or their pledgees, donees, transferees or other successors in interest will receive all of the net proceeds from the sale of the common stock and will pay all underwriting discounts and selling commissions, if any, applicable to any such sale. We will not receive any of the proceeds from the sale of the shares by the selling stockholders. We are paying the costs of preparing and filing the registration statement of which this prospectus is a part.

The shares are quoted on the Nasdaq National Market under the symbol "AETH." On February 22, 2001, the last sale price of the shares as reported on the Nasdaq National Market was \$24.38 per share.

The common stock may be sold by selling stockholders or their pledgees, donees, transferees or other successors in interest from time to time directly to purchasers or through agents, underwriters and dealers. See "Plan of Distribution" and "Selling Stockholders." The selling stockholders and any dealers, agents or underwriters who participate in the distribution of the common stock may be deemed to be "underwriters" within the meaning of the Securities Act of 1933 and any commission received by them and any profit on the resale of the common stock purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. See "Plan of Distribution" for a description of indemnification arrangements.

INVESTING IN THE COMMON STOCK INVOLVES RISKS THAT ARE DESCRIBED IN THE "RISK FACTORS" SECTION BEGINNING ON PAGE 6 OF THIS PROSPECTUS.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2001.

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ABOUT AETHER SYSTEMS

Aether provides wireless data services, systems and software enabling people to use handheld devices for mobile data communications and real-time transactions. We design, develop, sell and support complete wireless systems for corporations seeking to make data available to mobile workers or consumers. Our full mobile and wireless solution, including our wireless data engineering and development expertise, our wireless integration software and mobile data management software products, our customer service center and our network operations centers, positions us to take advantage of the growing demand for wireless data services.

We seek to develop and deliver wireless data services across a variety of industries and market segments in the United States and internationally. Our strategy initially focused on developing services for the financial services sector, whose participants we believe were among the earliest adopters of wireless data services. We currently offer and are developing wireless trading and financial services for several major financial institutions. We also currently offer and are developing financial news and information services through major content providers. We have moved and continue to move into other industries and market segments, including software products, logistics, field sales, healthcare, wireless commerce, mobile government and messaging.

Our strategy. Our strategy is to be the dominant provider in the United States and internationally of wireless data services and systems to corporations by using our engineering expertise, our software platforms, our customer service center, our network operations centers and our other resources. We believe our capabilities and experience have established us as an early market leader in

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wireless data services, and a key element of our strategy is to move quickly into new opportunities to extend our leadership position. Our strategy also includes the following other key elements:

- target a variety of industries and market segments for development of wireless data communications and services in the United States and internationally;
- offer a wide range of software products to address every aspect of wireless integration and mobile data management for mobile workers and consumers;
- expand our customer base and strengthen the Aether brand through enhanced sales and marketing efforts;
- maintain and strengthen our strategic relationships with suppliers and network carriers;
- seek to maximize our recurring revenue; and
- apply the expertise we gain through engineering services and research and development activities to emerging business opportunities.

Other information. We are a Delaware corporation. In October 1999, we completed our initial public offering of 6,900,000 shares of our common stock at an initial offering price of \$16.00 per share, which resulted in net proceeds of approximately \$101.1 million. In March 2000, we completed the offering of an additional 5,411,949 shares of our common stock at a price of \$205.00 per share and issued \$310.5 million of 6% convertible subordinated notes due 2005, which together resulted in net proceeds of approximately \$1.4 billion. All references to "we," "us," "our" or "Aether" in this prospectus mean Aether Systems, Inc. and its subsidiaries or predecessors.

Our principal executive offices are located at 11460 Cronridge Drive, Owings Mills, Maryland 21117, and our telephone number is (410) 654-6400. We maintain a Web site at www.aethersystems.com. Information contained in our Web site does not constitute a part of this prospectus.

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RECENT DEVELOPMENTS

In February 2001, we announced our financial results for the three months and the year ended December 31, 2000. At that time, we reported revenue of \$25.8 for the three-month period ended December 31, 2000, including subscriber revenue of \$13.1 million, engineering services revenue of \$3.9 million and software and related services revenue of \$8.8 million. We reported a net loss for the three month period ended December 31, 2000 of (\$3.37) per share compared with a net loss of (\$0.94) per share in the same period last year.

In December 2000, we acquired RTS Wireless, Inc., a leading developer of software systems connecting the Internet to a broad array of wireless devices, for \$26.0 million in cash and 1,259,981 shares of our common stock. In addition, we agreed to convert existing options held by RTS employees into options to acquire our common stock.

In December 2000, we acquired Motient Corporation's transportation business unit for \$45.0 million in cash, of which \$10.0 million was placed in escrow to cover indemnities by the sellers. The terms of the acquisition agreement provide for potential future payments of up to \$22.5 million based on revenue and other incentive targets for the acquired business in 2001.

RISK FACTORS

Investing in our common stock involves risks. You should carefully consider the following risks together with the other information contained in this prospectus and all the information incorporated by reference before deciding to buy our common stock.

WE HAVE HISTORICALLY INCURRED LOSSES AND THESE LOSSES MAY INCREASE IN THE FUTURE.

We reported net losses of \$2.7 million, \$4.7 million, \$30.7 million and \$230.4 million for the years ended December 31, 1997, 1998 and 1999 and for the nine months ended September 30, 2000, respectively. Information regarding our operating results for subsequent periods is or will be included in our periodic reports incorporated herein by reference. Our amortization of intangible assets and option and warrant expense has grown significantly as a result of recent acquisitions. In addition, we expect to continue to incur significant sales and marketing, systems development and administrative expenses. Therefore, we will need to generate significant revenue to become profitable and sustain profitability on a quarterly or annual basis. We expect to continue to incur significant losses for the foreseeable future. As a result, we may not be able to achieve profitability on a quarterly or annual basis.

OUR FUTURE RESULTS ARE UNCERTAIN BECAUSE OUR HISTORICAL REVENUE WAS DERIVED FROM SERVICES OTHER THAN THOSE WE EXPECT TO BE THE FOCUS OF OUR BUSINESS IN THE FUTURE.

We only have a limited history selling our current services on which you can evaluate our business, financial condition and operating results. Although we commenced operations in January 1996, until March 1997 all of our revenue came from engineering services and not from monthly service subscriptions or software licensing which we now provide and which will be our focus in the future. We have not had any AIM license sales other than sales to Inciscent, Inc. and Data Critical Corporation totaling \$1.25 million, for which the revenue will be recognized over the terms of the agreements. In addition, our monthly service subscriptions have come primarily from subscriptions to our financial data, wireless internet and messaging and online trading services, and our strategy includes development of services in other industries. Because of this change in focus and our recent acquisitions, you should not rely on our past performance to evaluate our future performance.

THERE IS NO ESTABLISHED MARKET FOR OUR SERVICES AND WE MAY NOT BE ABLE TO SELL ENOUGH OF OUR SERVICES TO BECOME PROFITABLE.

The markets for wireless data and transaction services are still emerging and continued growth in demand for and acceptance of these services remains uncertain. Current barriers to market acceptance of these services include cost, reliability, functionality and ease of use. We cannot be certain that these barriers will be overcome. We are currently developing services for some of our business customers pursuant to preliminary agreements with these parties and expect to develop services for other entities as well. We cannot assure you that these parties will enter into contracts for our services or that products developed for our other customers will result in revenue. Our competitors may develop alternative wireless data communications systems that gain broader market acceptance than our systems. If the market for our services does not grow, or grows more slowly than we currently anticipate, we may not be able to attract customers for our services and our revenues would be adversely affected.

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OUR RECENT ACQUISITIONS, INVESTMENTS AND STRATEGIC ALLIANCES MAY NOT DELIVER THE VALUE WE PAID OR WILL PAY FOR THEM AND MAY RESULT IN EXCESSIVE EXPENSES IF WE DO NOT SUCCESSFULLY INTEGRATE THEM, OR IF THE COSTS AND MANAGEMENT RESOURCES WE EXPEND IN CONNECTION WITH THE INTEGRATIONS EXCEED OUR EXPECTATIONS.

We expect that our recent acquisitions, investments and strategic alliances and any acquisitions, investments or strategic alliances we may pursue in the future will have a continuing, significant impact on

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our business, financial condition and operating results. The value of the companies that we acquire or invest in may be less than the amount we paid if there is:

- a decline of their position in the respective markets they serve; or
- a decline in general of the markets they serve.

Our financial results may be adversely affected if:

- we fail to assimilate the acquired assets with our pre-existing business;
- we lose key employees of these companies or of Aether as a result of the acquisitions;
- our management's attention is diverted by other business concerns; or
- we assume unanticipated liabilities related to the acquired assets.

In addition, the companies we have acquired or invested in or may acquire or invest in are subject to each of the business risks we describe in this section, and if they incur any of these risks the businesses may not be as valuable as the amount we paid. Further, we cannot guarantee that we will realize the benefits or strategic objectives we are seeking to obtain by acquiring or investing in these companies. In addition, we cannot assure you that our various pending acquisitions, investments and strategic alliances will be completed on the terms we describe, or at all.

WE MAY NOT ACHIEVE PROFITABILITY IF WE ARE UNABLE TO MAINTAIN, IMPROVE AND DEVELOP THE WIRELESS DATA SERVICES WE OFFER.

We believe that our future business prospects depend in part on our ability to maintain and improve our current services and to develop new ones on a timely basis. Our services will have to achieve market acceptance, maintain technological competitiveness and meet an expanding range of customer requirements. As a result of the complexities inherent in our service offerings, major new wireless data services and service enhancements require long development and testing periods. We may experience difficulties that could delay or prevent the successful development, introduction or marketing of new services and service enhancements. Additionally, our new services and service enhancements may not achieve market acceptance. If we cannot effectively develop and improve services we may not be able to recover our fixed costs or otherwise become profitable.

IF WE DO NOT RESPOND EFFECTIVELY AND ON A TIMELY BASIS TO RAPID TECHNOLOGICAL CHANGE, OUR SERVICES MAY BECOME OBSOLETE AND WE MAY LOSE SALES.

The wireless and data communications industries are characterized by rapidly changing technologies, industry standards, customer needs and competition, as well as by frequent new product and service introductions. Our

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services are integrated with wireless handheld devices and the computer systems of our corporate customers. Our services must also be compatible with the data networks of wireless carriers. We must respond to technological changes affecting both our customers and suppliers. We may not be successful in developing and marketing, on a timely and cost-effective basis, new services that respond to technological changes, evolving industry standards or changing customer requirements. Our ability to grow and achieve profitability will depend, in part, on our ability to accomplish all of the following in a timely and cost-effective manner:

- effectively use and integrate new wireless and data technologies;
- continue to develop our technical expertise;
- enhance our wireless data, engineering and system design services;
- develop applications for new wireless networks; and
- influence and respond to emerging industry standards and other changes.

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WE DEPEND UPON WIRELESS NETWORKS OWNED AND CONTROLLED BY OTHERS. IF WE DO NOT HAVE CONTINUED ACCESS TO SUFFICIENT CAPACITY ON RELIABLE NETWORKS, WE MAY BE UNABLE TO DELIVER SERVICES AND OUR SALES COULD DECREASE.

Our ability to grow and achieve profitability partly depends on our ability to buy sufficient capacity on the networks of wireless carriers such as Verizon Wireless, Research In Motion and AT&T Wireless Services and on the reliability and security of their systems. All of our services are delivered using airtime purchased from third parties. We depend on these companies to provide uninterrupted and "bug free" service and would not be able to satisfy our customers' needs if they failed to provide the required capacity or needed level of service. In addition, our expenses would increase and our profitability could be materially adversely affected if wireless carriers were to increase the prices of their services. Our existing agreements with the wireless carriers generally have one-year terms. Some of these wireless carriers are, or could become, our competitors and if they compete with us they may refuse to provide us with their services.

OUR FAILURE TO DEVELOP RECOGNITION FOR THE AETHER BRAND COULD PREVENT US FROM ACHIEVING A PROFITABLE LEVEL OF SALES.

Our expenses related to sales and marketing activities were \$840,000 and \$2.1 million for the years ended December 31, 1998 and 1999, respectively, and \$32.3 million for the nine months ended September 30, 2000. We intend to increase the market presence of our brand over time, which will require us to continue our increased spending on sales and marketing. We have applied for, but have not received, federal trademark registrations for the names "Aether," "Aether Systems" and "AIM," among others, and we may not be able to use these names effectively or at all if we fail to obtain such registrations due to conflicting marks or otherwise. As a result of our recent acquisitions, we expect to market our acquired products and services under their existing brands. We may lose existing customers or fail to attract new customers if these brands are not well received by our customers, if our marketing efforts are not productive, if we are otherwise unsuccessful in increasing our brand awareness or if our competition has greater brand recognition.

WE DEPEND ON THIRD PARTIES FOR THE MARKETING AND SALES OF SOME OF OUR SERVICES. IF THE MARKETING EFFORTS OF THESE THIRD PARTIES ARE NOT EFFECTIVE, WE MAY NOT ACHIEVE A PROFITABLE LEVEL OF SALES.

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We rely substantially on the efforts of others to market and sell some of our wireless data communications services, in particular the online trading services we have developed for Charles Schwab and Morgan Stanley Dean Witter Online and are developing for Merrill Lynch, National Discount Brokers, Bear Stearns and other financial institutions. We also expect to rely on the marketing efforts of our strategic relationship partners for products under development in our other market segments such as healthcare and wireless commerce. We cannot control whether or how these third parties who sell and market our services will perform their obligations to market our services. If these third parties fail to market our services or their efforts fail to result in new customers, we may be unable to attract new customers and our revenue could be adversely affected.

WE MAY FAIL TO SUPPORT OUR ANTICIPATED GROWTH IN OPERATIONS, WHICH COULD REDUCE DEMAND FOR OUR SERVICES AND MATERIALLY ADVERSELY AFFECT OUR REVENUE.

Our business strategy is based on the assumption that the number of subscribers to our services, the amount of information they want to receive and the number of services we offer will all increase. We must continue to develop and expand our systems and operations to accommodate this growth. The expansion and adaptation of our customer service and network operations centers require substantial financial, operational and management resources. We may be unable to expand our operations for one or more of the following reasons:

- we may not be able to locate or hire at reasonable compensation rates qualified engineers and other employees necessary to expand our capacity;

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- we may not be able to obtain the hardware necessary to expand our capacity;
- we may not be able to expand our billing and other related support systems; and
- we may not be able to obtain sufficient additional capacity from wireless carriers.

Due to the limited deployment of our services to date, the ability of our systems and operations to connect and manage a substantially larger number of customers while maintaining superior performance is unknown. Any failure on our part to develop and maintain our wireless data services as we experience rapid growth could significantly reduce demand for our services and materially adversely affect our revenue.

WE DEPEND ON RECRUITING AND RETAINING KEY MANAGEMENT AND TECHNICAL PERSONNEL WITH WIRELESS DATA AND SOFTWARE EXPERIENCE AND WE MAY NOT BE ABLE TO DEVELOP NEW PRODUCTS OR SUPPORT EXISTING PRODUCTS IF WE CANNOT HIRE OR RETAIN QUALIFIED EMPLOYEES.

Because of the technical nature of our products and the dynamic market in which we compete, our performance depends on attracting and retaining key employees. Competition for qualified personnel in the wireless data and software industries is intense and finding qualified personnel with experience in both industries is even more difficult. We believe there are only a limited number of individuals with the requisite skills in the field of wireless data communication, and it is becoming increasingly difficult to hire and retain these persons. Competitors and others have in the past attempted, and may in the future attempt, to recruit our employees. Each of our engineers has entered into a non-competition agreement with us for a period of ten months after they leave

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Aether. These agreements will not prevent our engineers from leaving or working for competitors relatively soon after they leave us.

We currently maintain a key person life insurance policy for David S. Oros, our chairman and chief executive officer. We do not maintain insurance policies for any of our other executive officers.

WE MAY NOT HAVE ADEQUATELY PROTECTED OUR INTELLECTUAL PROPERTY RIGHTS, WHICH COULD ALLOW COMPETITORS TO DEVELOP SIMILAR PRODUCTS USING SIMILAR TECHNOLOGY AND THUS REDUCE OUR SALES AND REVENUE.

We have attempted to protect our technology, including the technology we have obtained or will obtain in our acquisitions, through patent, trademark and copyright protection, as well as through trade secret laws and non-competition and non-disclosure agreements with key employees. Patents may infringe on valid patents held by third parties, or patents held by third parties may limit the scope of any patents we receive. In particular, the patent we acquired in our acquisition of Riverbed covers a technology that is similar to other patented technologies. In addition, we have no international patent protection in this technology. If we are not adequately protected, other companies with sufficient engineering expertise could develop competing products based on our intellectual property and reduce our sales and thus our revenue.

WE MAY BE SUED BY THIRD PARTIES FOR INFRINGEMENT OF THEIR INTELLECTUAL PROPERTY RIGHTS AND INCUR COSTS OF DEFENSE AND POSSIBLY ROYALTIES OR LOSE THE RIGHT TO USE TECHNOLOGY IMPORTANT TO PROVIDING OUR SERVICES.

The telecommunications and software industries are characterized by the existence of a large number of patents and frequent litigation based on allegations of patent infringement or other violations of intellectual property rights. As the number of participants in our market increases, the possibility of an intellectual property claim against us could increase. We have received two claims that we have infringed patents developed by other parties. Although we believe these claims are without merit, these and any other intellectual property claims, with or without merit, could be time-consuming and expensive to litigate or settle, could require us to enter into costly royalty arrangements, could divert management attention from administering our business and could hinder us from conducting our business.

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WE MAY BE SUBJECT TO LIABILITY FOR TRANSMITTING INFORMATION, AND OUR INSURANCE COVERAGE MAY BE INADEQUATE TO PROTECT US FROM THIS LIABILITY.

We may be subject to claims relating to information transmitted over systems we develop or operate. These claims could take the form of lawsuits for defamation, negligence, copyright or trademark infringement or other actions based on the nature and content of the materials. Although we carry general liability insurance, our insurance may not cover potential claims of this type or may not be adequate to cover all costs incurred in defense of potential claims or to indemnify us for all liability that may be imposed.

DISRUPTION OF OUR SERVICES DUE TO ACCIDENTAL OR INTENTIONAL SECURITY BREACHES MAY HARM OUR REPUTATION, POTENTIALLY CAUSING A LOSS OF SALES AND AN INCREASE IN OUR EXPENSES.

A significant barrier to the growth of wireless data services or transactions on the Internet or by other electronic means has been the need for secure transmission of confidential information. Our systems could be disrupted by unauthorized access, computer viruses and other accidental or intentional actions. We may incur significant costs to protect against the threat of

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security breaches or to alleviate problems caused by such breaches. If a third party were able to misappropriate our users' personal or proprietary information or credit card information, we could be subject to claims, litigation or other potential liabilities that could materially adversely impact our revenue and may result in the loss of customers.

ANY TYPE OF SYSTEMS FAILURE COULD REDUCE SALES, INCREASE COSTS OR RESULT IN CLAIMS OF LIABILITY.

Our existing wireless data services are dependent on real-time, continuous feeds from Reuters Selectfeed Plus and others. The ability of our subscribers to make securities trades, receive sales leads and receive critical business information requires timely and uninterrupted connections with our wireless network carriers. Any disruption from our satellite feeds or backup landline feeds could result in delays in our subscribers' ability to receive information or execute trades. We cannot assure you that our systems will operate appropriately if we experience a hardware or software failure or if there is an earthquake, fire or other natural disaster, a power or telecommunications failure, intentional disruptions of service by third parties, an act of God or an act of war. A failure in our systems could cause delays in transmitting data, and as a result we may lose customers or face litigation that could involve material costs and distract management from operating our business.

OUR ABILITY TO SELL NEW AND EXISTING SERVICES AT A PROFIT COULD BE IMPAIRED BY COMPETITORS.

Intense competition could develop in the market for services we offer. We developed our software using standard industry development tools. Many of our agreements with wireless carriers, wireless handheld device manufacturers and data providers are non-exclusive. Our competitors could develop and use the same products and services in competition with us. With time and capital, it would be possible for competitors to replicate our services. Our competitors could include wireless network carriers such as Verizon Wireless and AT&T Wireless Services, software developers such as Microsoft Corporation, 724 Solutions Inc. and Phone.com and systems integrators such as International Business Machines Corporation. Many of our competitors have significantly greater resources than we do. Furthermore, competitors may develop a different approach to marketing the services we provide in which subscribers may not be required to pay for the information provided by our services. Competition could reduce our market share or force us to lower prices to unprofitable levels.

WE MAY LOSE THE OPPORTUNITY TO PURSUE DESIRABLE PROJECTS TO INCISCENT, OMNISKEY, SILA AND MINDSURF AND OTHER COMPANIES IN WHICH WE HOLD EQUITY INTERESTS, BECAUSE SOME OF OUR DIRECTORS AND EXECUTIVE OFFICERS SERVE ON THE BOARDS OF DIRECTORS OF THESE COMPANIES.

David S. Oros, our chairman and chief executive officer, and some of our other directors have been appointed to the boards of directors of companies in which we hold an equity interest, including OmniSky, Sila and MindSurf. Some of our executive officers have been appointed to the board of directors of

companies in which we hold an equity interest, including Inciscent and MindSurf. These other companies may develop products that compete with our own products. Mr. Oros and the other directors and executive officers may learn of business opportunities that are appropriate for the boards on which they serve and Mr. Oros and these other individuals may not be required to make those opportunities available to us. If OmniSky, Sila, Inciscent, MindSurf or any other joint ventures we may enter into pursue opportunities that we would have an interest in pursuing, our business may fail to grow or our existing business may suffer.

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Mr. Oros and these other directors and executive officers may also have other conflicts of interest with Aether because of their positions with OmniSky, Sila, Inciscent and MindSurf and OmniSky's, Sila's, Inciscent's and MindSurf's contractual relationships with Aether.

AN INTERRUPTION IN THE SUPPLY OF PRODUCTS AND SERVICES THAT WE OBTAIN FROM THIRD PARTIES COULD CAUSE A DECLINE IN SALES OF OUR SERVICES, AND PRODUCTS WE PURCHASE TO AVOID SHORTAGES MAY BECOME OBSOLETE BEFORE WE CAN USE THEM.

In designing, developing and supporting our wireless data services, we rely on wireless carriers, wireless handheld device manufacturers, content providers and software providers. These suppliers may experience difficulty in supplying us products or services sufficient to meet our needs or they may terminate or fail to renew contracts for supplying us these products or services on terms we find acceptable. Any significant interruption in the supply of any of these products or services could cause a decline in sales of our services unless and until we are able to replace the functionality provided by these products and services. Specifically, Novatel Wireless and Sierra Wireless Inc. are our only suppliers of wireless modems, which are an integral hardware component of our services. Research In Motion is our primary provider of pager devices. It can be difficult to obtain these wireless modems and their parts. Although we have purchased a large supply of these modems, they may become obsolete before we are able to use them. We also depend on third parties to deliver and support reliable products, enhance their current products, develop new products on a timely and cost-effective basis and respond to emerging industry standards and other technological changes. In addition, we rely on the ability of our content providers -- Reuters, the New York Stock Exchange, Inc., the Chicago Board of Trade, the Nasdaq Stock Market, Inc. and the Options Price Reporting Authority -- to continue to provide us with uninterrupted access to the news and financial information we provide to our customers. The failure of third parties to meet these criteria, or their refusal or failure to deliver the information for whatever reason, could materially harm our business.

OUR SALES CYCLE IS LONG, AND OUR STOCK PRICE COULD DECLINE IF SALES ARE DELAYED OR CANCELLED.

Quarterly fluctuations in our operating performance are exacerbated by the length of time between our first contact with a business customer and the first revenue from sales of services to that customer or end users. Because our services represent a significant investment for our business customers, we spend a substantial amount of time educating them regarding the use and benefits of our services and they, in turn, spend a substantial amount of time performing internal reviews and obtaining capital expenditure approvals before purchasing our services. As much as a year may elapse between the time we approach a business customer and the time we begin to deliver services to a customer or end user. Any delay in sales of our services could cause our quarterly operating results to vary significantly from projected results, which could cause our stock price to decline. In addition, we may spend a significant amount of time and money on a potential customer that ultimately does not purchase our services.

OUR SALES OF FINANCIAL DATA AND TRADING SERVICES COULD DECREASE IF THERE IS A DECLINE IN SECURITIES TRADING.

We earn a substantial portion of our revenue (we earned 52.2% for the nine months ended September 30, 2000, or 41.1% on a pro forma basis giving effect to the acquisitions of LocusOne, Riverbed, NetSearch, Cerulean, Sunpro, Sinope and IFX and the related formation of Sila) from services that provide financial information and wireless trading capability. If there is a prolonged decline in the

overall level of securities trading, or online trading in particular, our operating results may decline. A decline in securities trading may result from:

- loss of confidence in the reliability or security of online trading systems;
- government regulation of the securities industry or online trading; or
- a downturn or volatility in the stock market.

OUR SOFTWARE MAY CONTAIN DEFECTS OR ERRORS, AND OUR SALES COULD GO DOWN IF THIS INJURES OUR REPUTATION OR DELAYS SHIPMENTS OF OUR SOFTWARE.

The AIM package of wireless messaging and software development tools we develop, the ScoutWare family of software products we develop, Sila's proprietary software and Aether Logistics' e-mobile software are complex and must meet the stringent technical requirements of our customers. We must develop our services quickly to keep pace with the rapidly changing software and telecommunications markets. Software as complex as ours is likely to contain undetected errors or defects, especially when first introduced or when new versions are released. Our software may not be free from errors or defects after delivery to customers has begun, which could result in the rejection of our software or services, damage to our reputation, lost revenue, diverted development resources and increased service and warranty costs.

THE STOCKHOLDER AGREEMENT AMONG OUR MAJOR STOCKHOLDERS HAS THE EFFECT OF ALLOWING THEM TO NOMINATE SEVEN OF OUR TWELVE DIRECTORS, WHICH LIMITS THE ABILITY OF NEW INVESTORS TO INFLUENCE CONTROL OF AETHER.

NexGen Technologies, L.L.C., Telcom-ATI Investors, L.L.C., Reuters MarketClip Holdings Sarl, a subsidiary of Reuters Group Plc., and 3Com Corporation -- who together hold 32.7% of the shares of our common stock -- entered into a stockholder agreement that governs voting for our directors. The agreement provides that each party will vote all of its shares for one director nominated by NexGen, two directors nominated by Telcom-ATI Investors, two directors nominated jointly by NexGen and Telcom-ATI Investors and one director nominated by each of Reuters and 3Com. As a result, seven directors of our board are nominated by these major stockholders. As we currently have authorized only 12 directors, the voting rights of our stockholders other than these major stockholders effectively will be meaningfully exercised only in connection with the election of five of our directors. In addition to its effect on the voting rights of our new investors, the stockholder agreement could have the effect of delaying or preventing a change in control.

WE MAY NEED ADDITIONAL CAPITAL AND WE MAY NOT BE ABLE TO OBTAIN IT, WHICH COULD PREVENT US FROM CARRYING OUT OUR BUSINESS STRATEGY.

We currently anticipate that our available cash resources will be sufficient to fund our operating needs for at least the next 12 months, including the expansion of our sales and marketing program and any acquisitions we may pursue in that period. Thereafter, we expect to require additional financing in an amount that we cannot determine at this time. We do not have any bank credit facility or other working capital credit line under which we may borrow funds for working capital or other general corporate purposes. If our plans or assumptions change or are inaccurate, we may be required to seek capital sooner than anticipated. We may need to raise funds through public or private debt or equity financings.

If funds are raised through the issuance of equity securities, the

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percentage ownership of our then-current stockholders may be reduced and the holders of new equity securities may have rights, preferences or privileges senior to those of the holders of our common stock. If additional funds are raised through a bank credit facility or the issuance of debt securities, the holder of this indebtedness would have rights senior to the rights of the holders of our common stock and the terms of this indebtedness could impose restrictions on our operations. If we need to raise additional funds, we may not be able to do so on terms favorable to us, or at all. If we cannot raise adequate funds on acceptable terms, we may not be able to continue to fund our operations.

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WE MAY NOT BE ABLE TO RECOVER THE FULL VALUE OF GOODWILL RECORDED ON SOME OF OUR ACQUISITIONS.

Consideration for some of our acquisitions was partially or fully funded through the issuance of shares of our common stock at a time when our stock price was at historically high prices. In recent months, stock prices in our and similar industries have fallen in response to a variety of factors, including a general downturn in the economy. If the current declines in our stock price are determined to be other than temporary, we may not be able to recover the full value of the goodwill recorded on some of our acquisitions.

NEW LAWS AND REGULATIONS THAT IMPACT OUR INDUSTRY COULD INCREASE OUR COSTS OR REDUCE OUR OPPORTUNITIES TO EARN REVENUE.

We are not currently subject to direct regulation by the Federal Communications Commission or any other governmental agency, other than regulations applicable to businesses in general. However, in the future, we may become subject to regulation by the FCC or another regulatory agency. In addition, the wireless carriers who supply us airtime and certain of our hardware suppliers are subject to regulation by the FCC and regulations that affect them could increase our costs or reduce our ability to continue selling and supporting our services.

OUR STOCK PRICE, LIKE THAT OF MANY TECHNOLOGY COMPANIES, HAS BEEN, AND MAY CONTINUE TO BE, VOLATILE.

The market price of our common stock has been highly volatile and is likely to continue to be highly volatile. The trading price of our common stock increased significantly from our initial offering price of \$16.00 per share on October 20, 1999 and has fluctuated from a high of \$305 1/16 to a low of \$24 3/8 in the one year prior to the date of this prospectus. We are involved in a highly visible, rapidly changing industry and stock prices in our and similar industries have risen and fallen in response to a variety of factors, including:

- announcements of new wireless data communications technologies and new providers of wireless data communications;
- acquisitions of or strategic alliances among providers of wireless data communications;
- changes in recommendations by securities analysts regarding the results or prospects of providers of wireless data communications; and
- changes in investor perceptions of the acceptance or profitability of wireless data communications.

WE MAY HAVE TO TAKE ACTIONS THAT ARE DISRUPTIVE TO OUR BUSINESS STRATEGY TO AVOID REGISTRATION UNDER THE INVESTMENT COMPANY ACT OF 1940.

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As part of our business strategy we own minority and majority equity interests in a number of ventures. While we believe we are not currently an investment company, our ownership of these securities could potentially subject us to registration under the Investment Company Act of 1940, which, absent an applicable exclusion or exemption, requires registration for companies that are engaged primarily in the business of investing, reinvesting, owning, holding or trading in securities. If we were required to register as an investment company, we would not be able to continue operating our business in accordance with our business plan. Accordingly, we intend to take all necessary steps to avoid being deemed an investment company. These necessary steps might disrupt our business strategy of forming joint ventures with strategic partners and making equity investments in companies with whom we have a strategic relationship to develop new technology or extend the reach of existing products and services. A company may be deemed to be an investment company if it owns investment securities with a value exceeding 40% of its total assets excluding cash items and government securities as defined in the Investment Company Act, subject to certain exclusions and exemptions. Any acquisition or disposition of assets, or fluctuations in the value of our assets may require us to take steps to avoid registration under the Investment Company Act. These steps could include buying, refraining from buying, selling or refraining from selling securities in circumstances where we would not take these actions except to avoid registration under the Investment Company Act. For example, we may have to retain majority or controlling interests in our joint ventures

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after their initial public offerings, which would require us to expend significant amounts of capital that we might otherwise use to expand our products and services in other market segments. Moreover, we may incur tax liabilities if we are required to sell assets. We may also be unable to purchase additional investment securities that may be important to our business strategy. We have applied to the SEC for an exemptive order declaring that we are not an investment company and are not required to register under the Investment Company Act. We may not ultimately be successful in receiving such an order.

WE CONDUCT OPERATIONS IN A NUMBER OF COUNTRIES THROUGH SILA AND OTHER SUBSIDIARIES AND ARE SUBJECT TO RISKS OF INTERNATIONAL OPERATIONS.

We currently operate outside the United States through Sila and other subsidiaries, which have operations throughout Europe and Asia. We expect that Sila's management will independently perform the day-to-day operations of our joint venture and will not be within our day-to-day control. Any failure by Sila to successfully implement or maintain services could result in negative publicity and have an unfavorable impact on our ability to expand our products and services to Europe and Asia. We face various risks in expanding outside the United States, including:

- difficulty and cost of monitoring our international operations;
- cultural differences in the conduct of business;
- unexpected changes in regulatory requirements, including U.S. export restrictions on encryption technologies; and
- recessionary or inflationary environments in foreign economies, particularly in Asian countries and in the financial services sector.

We cannot assure you that our international operations will contribute positively to our business, financial condition or result of operations. Our failure to manage international growth could result in higher operating costs

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than anticipated or could delay or preclude altogether our ability to generate revenues in international markets. In addition, our expanding operations outside the United States are, in some instances, conducted in currencies other than the U.S. dollar and fluctuations in the value of foreign currencies relative to the U.S. dollar could cause currency exchange losses. We cannot predict the effect of exchange rate fluctuations on our future operating results.

WE HAVE ANTI-TAKEOVER DEFENSES THAT COULD DELAY OR PREVENT AN ACQUISITION OF AETHER AND COULD ADVERSELY AFFECT THE PRICE OF OUR COMMON STOCK.

Provisions of our certificate of incorporation and bylaws and provisions of Delaware law could delay, defer or prevent an acquisition or change of control of Aether or otherwise adversely affect the price of our common stock. For example, our bylaws limit the ability of stockholders to call a special meeting. Moreover, our certificate of incorporation permits our board to issue shares of preferred stock without stockholder approval, which means that the board could issue shares with special voting rights or other provisions that could deter a takeover. In addition to delaying or preventing an acquisition, the issuance of a substantial number of preferred shares could adversely affect the price of our common stock.

SHARES ELIGIBLE FOR FUTURE SALE BY OUR CURRENT STOCKHOLDERS MAY DEPRESS OUR SHARE PRICE.

As of February 8, 2001, we had outstanding 40,428,105 shares of common stock. Sales of a substantial number of our shares of common stock in the public market -- or the expectation of such sales -- could cause the market price of our common stock to drop. All the shares sold pursuant to this prospectus will be, and the shares sold in our initial public offering, our offering in March 2000, our September, 2000 offering and the October 2000 shelf registration are, freely tradable. We have agreed to register the resale of 17,921,884 shares upon demand beginning on October 26, 2000 and 462,412 shares beginning on April 30, 2001. After February 24, 2001, 13,521,129 shares (including some of the shares subject to registration rights) will be eligible for sale, subject to a limitation on the number of shares that can be sold in any three-month period. An additional 4,575,754 shares subject to registration rights will become eligible for sale without registration at various times after March 6, 2001 and an additional

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462,412 shares will become eligible for sale without registration on September 14, 2001, in each case subject to a limitation on the number of shares that can be sold in any three-month period.

We filed a registration statement to register all shares of common stock that were issued to our employees under our equity incentive plan and intend to file future registration statements. Shares issued upon exercise of stock options will be eligible for resale in the public market without restriction. As of February 9, 2001, options and warrants to purchase 4,761,156 shares of our common stock were issued and outstanding and covered by the registration statement. In addition, warrants to purchase 893,665 additional shares were issued and outstanding on that date.

DEBT SERVICE OBLIGATIONS MAY ADVERSELY AFFECT OUR CASH FLOW.

As a result of the \$310.5 million of 6% convertible subordinated notes due 2005 currently outstanding, we have a substantial amount of indebtedness, primarily consisting of the notes. As a result of this indebtedness, we are obligated to make principal and interest payments. There is a possibility that we may be unable to generate cash sufficient to pay the principal of, interest

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on and other amounts due in respect of our indebtedness when due. We may also obtain additional long-term debt and working capital lines of credit to meet future financing needs. We cannot assure you that additional financing arrangements will be available on commercially reasonable terms or at all.

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FORWARD-LOOKING STATEMENTS

This prospectus includes forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act. We have based these forward-looking statements on our current expectations and projections about future events. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "pending," "potential," "continue," "expects," "anticipates," "intends," "plans," "believes," "predicts," "estimates" and similar expressions, although not all forward-looking statements are identified by these words. These forward-looking statements are subject to a number of risks, uncertainties and assumptions about Aether and our industry, including those we describe in the "Risk Factors" section of this prospectus. In light of these risks, uncertainties and assumptions, the forward-looking events discussed in this prospectus might not occur. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

This prospectus relates to shares of our common stock being offered and sold for the accounts of the selling stockholders named in this prospectus. We will not receive any proceeds from the shares sold pursuant to this prospectus.

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SELLING STOCKHOLDERS

The following table sets forth certain information with respect to beneficial ownership of our common stock as of February 16, 2001, as adjusted to reflect the sale of 2,944,960 shares of common stock pursuant to this prospectus, as to each stockholder selling shares of our common stock pursuant to this prospectus. In addition to the selling stockholders identified below, this prospectus includes an additional 462,412 shares that we expect will be added if certain stockholders who have the right to be included in the prospectus exercise those rights. Any persons who exercise their rights will be identified as selling stockholders prior to the effective date of this prospectus.

Except as indicated in the footnotes to this table and under applicable community property laws, to our knowledge, the persons named in the table have sole voting and investment power with respect to all shares of common stock. For the purposes of calculating percent ownership as of February 16, 2001, 40,438,599 shares were issued and outstanding.

The persons selling shares pursuant to this prospectus may include pledgees, donees, transferees or other successors in interest of the persons identified below as selling stockholders.

OWNERSHIP OF
SHARES BEFORE THE

SHARES OF
COMMON

OWNERSHIP OF
SHARES AFTER THE

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SELLING STOCKHOLDERS	OFFERING (1)		STOCK COVERED BY THIS PROSPECTUS	OFFERING
	NUMBER	PERCENT		
Mayfield X, L.P.(3).....	649,891	2.1%	649,891	0
Mayfield Associates Fund V, L.P.(3).....	22,409	*	22,409	0
Mayfield Principals Fund, L.C.C.(3).....	74,700	*	74,700	0
Columbia Riverbed Partners, LLC.....	559,279	1.4%	559,279	0
Columbia Capital Equity Partners II (QP), L.P.	514,309	1.3%	514,309	0
FBR Technology Venture Partners, L.P.	661,960	1.6%	661,960	0

* Less than 1%.

(1) Includes shares of common stock which are being held in escrow until March 6, 2001 in connection with the Riverbed acquisition but which are beneficially owned by such stockholder.

(2) Assuming all of the shares covered by this prospectus are sold.

(3) We previously registered the resale of 249,995 shares held by Mayfield X L.P., Mayfield Associates Fund V, L.P. and Mayfield Principals Fund, L.L.C. on Form S-1 (Registration No. 333-45656). Since that time, we converted that registration statement to a Form S-3 in connection with the registration of shares held by other stockholders, and listed the partners and members of Mayfield as the selling stockholders (Registration No. 333-48898).

PLAN OF DISTRIBUTION

We have been advised that the selling stockholders (and their pledgees, donees, transferees and other successors in interest) may offer shares of common stock from time to time depending on market conditions and other factors, in one or more transactions on the Nasdaq National Market, or any other national securities exchanges or over-the-counter markets on which the shares may be traded, or in negotiated transactions, at market prices prevailing at the time of sale, at prices related to those market prices, at negotiated prices or at fixed prices.

Sales of shares of common stock by the selling stockholders may involve (i) block transactions in which the broker or dealer so engaged will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction, (ii) purchases by a broker-dealer as principal and resale by such broker-dealer for its own account pursuant to this prospectus, (iii) ordinary brokerage transactions and transactions in which a broker solicits purchasers or (iv) privately negotiated transactions. To the extent required, this prospectus may be amended and supplemented from time to time to describe a specific plan of distribution. In connection with the distribution of the shares of common stock or otherwise, the selling stockholders may enter into hedging transactions with broker-dealers. In connection with such transactions, broker-dealers may engage in short sales of the common stock in the course of hedging the position they assume with the selling stockholders. The selling stockholders may also sell the common stock short and redeliver the shares to close out such short positions.

The selling stockholders may also enter into option transactions (including call or put option transactions) or other transactions with broker-dealers which

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require delivery to such broker-dealer of shares offered hereby, which shares such broker-dealer may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction, if necessary). The selling stockholders may also pledge shares to a broker-dealer and, upon a default, such broker-dealer may effect sales of the pledged shares pursuant to this prospectus (as supplemented or amended to reflect such transaction, if necessary). The selling stockholders may also sell the common stock through one or more underwriters on a firm commitment or best-efforts basis (with a supplement or amendment to this prospectus, if necessary). In addition, any shares that qualify for sale pursuant to Rule 144 may be sold under Rule 144 rather than pursuant to this prospectus.

Brokers and dealers may receive compensation in the form of concessions or commissions from the selling stockholders and/or purchasers of shares for whom they may act as agent and/or to whom they may sell as principal (which compensation may be in excess of customary commissions). The selling stockholders and any broker or dealer that participates in the distribution of shares may be deemed to be underwriters and any commissions received by them and any profit on the resale of shares positioned by a broker or dealer may be deemed to be underwriting discounts and commissions under the Securities Act. We have agreed to indemnify the selling stockholders, the officers, directors, partners, agents and employees of the selling stockholders, any underwriter (as defined in the Securities Act) for such selling stockholder, and each person, if any, who controls such selling stockholder or underwriter within the meaning of the Securities Act or the Exchange Act against certain liabilities, including liabilities arising under the Securities Act or the Exchange Act. The selling stockholders may agree to indemnify any agent or broker-dealer that participates in transactions involving sales of the shares of common stock against certain liabilities, including liabilities arising under the Securities Act.

We have advised the selling stockholders that Regulation M under the Exchange Act may apply to sales of shares and to the activities of the selling stockholders or broker-dealers in connection therewith. We will bear all costs, expenses and fees in connection with the registration of the shares of common stock covered by this prospectus. The selling stockholders will bear any brokerage commissions and similar selling expenses, if any, attributable to the sale of the shares.

The selling stockholders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus.

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LEGAL MATTERS

The validity of the common stock offered hereby will be passed upon for Aether by Wilmer, Cutler & Pickering, Washington, D.C.

EXPERTS

The consolidated financial statements and schedule of Aether Systems, Inc. as of December 31, 1998 and 1999, and for each of the years in the three-year period ended December 31, 1999 have been incorporated by reference in this prospectus and elsewhere in the registration statement in reliance upon the report of KPMG LLP, independent certified public accountants, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

The financial statements of Mobeo, Inc. as of December 31, 1997 and 1998 and for each of the three years in the period ended December 31, 1998 have been incorporated by reference in this prospectus and elsewhere in the registration

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statement in reliance on the report of PricewaterhouseCoopers LLP, independent accountants, given on the authority of said firm as experts in auditing and accounting.

The financial statements of LocusOne Communications, Inc. as of December 31, 1998 and 1999, and for each of the years then ended have been incorporated by reference in this prospectus and elsewhere in the registration statement in reliance upon the report of KPMG LLP, independent certified public accountants, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

The financial statements of Riverbed Technologies, Inc. as of December 31, 1998 and 1999, and for the period from October 21, 1998 (date of inception) to December 31, 1998 and for the year ended December 31, 1999, have been incorporated by reference in this prospectus and elsewhere in the registration statement in reliance upon the report of KPMG LLP, independent certified public accountants, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act and we file reports, proxy and information statements and other information with the SEC. You may read and copy all or any portion of the reports, proxy and information statements or other information we file at the SEC's principal office in Washington, D.C., and copies of all or any part thereof may be obtained from the Public Reference Section of the SEC, 450 Fifth Street, N.W., Washington, D.C. 20549, and at the SEC's regional offices located at Citicorp Center, 500 West Madison Street, Suite 1400, Chicago, Illinois 60661 and at 7 World Trade Center, 13th Floor, New York, New York 10048 after payment of fees prescribed by the SEC. Please call the SEC at 1-800-SEC-0330 for further information on operation of the public reference rooms. The SEC also maintains a Web site which provides online access to reports, proxy and information statements and other information regarding registrants that file electronically with the SEC at the address <http://www.sec.gov>.

We have filed with the SEC a Registration Statement on Form S-3 under the Securities Act with respect to the common stock to be sold in this offering. This prospectus does not contain all of the information set forth in the Registration Statement and the exhibits to the Registration Statement. For further information with respect to Aether and our common stock offered hereby, reference is made to the Registration Statement and the exhibits filed as a part of the Registration Statement. Statements contained in this prospectus concerning the contents of any contract or any other document are not necessarily complete; reference is made in each instance to the copy of such contract or any other document filed as an exhibit to the Registration Statement. Each such statement is qualified in all respects by such reference to such exhibit. The Registration Statement, including exhibits thereto, may be inspected without charge at the locations described above, or obtained upon payment of fees prescribed by the SEC.

The Securities and Exchange Commission also allows Aether to "incorporate by reference" information into this prospectus. This means that Aether can disclose important information to you by referring you to another document filed separately with the Securities and Exchange Commission. The information incorporated by reference is considered to be part of this prospectus, except for any information that is superseded by information that is included directly in this document, or any future filings with the Securities and Exchange Commission made under Sections 13(a), 13(c), 14 or 15(d) of the Securities

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Exchange Act of 1934.

This prospectus incorporates by reference the documents listed below:

- Aether's Annual Report on Form 10-K for the fiscal year ended December 31, 1999.
- Aether's Quarterly Reports on Form 10-Q for the quarters ended March 31, 2000, June 30, 2000 and September 30, 2000.
- Aether's Current Reports on Form 8-K dated February 3, 2000, March 6, 2000, April 6, 2000 and September 14, 2000, including any amendments.
- The Description of Capital Stock contained in Aether's Registration Statement on Form S-1 (Registration No. 333-45656) dated September 27, 2000, including any amendments or reports filed for the purpose of updating such description.
- In addition, all documents subsequently filed by Aether pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of the offering shall be deemed to be incorporated by reference herein from their respective dates of filing.

You may request a copy of any filings incorporated by reference in this prospectus from Aether by contacting:

Kevin Connelly
 VP Finance and Accounting
 Aether Systems, Inc.
 11460 Cronridge Drive
 Owings Mills, Maryland 21117
 Telephone: (410) 654-6400

You should rely only on the information incorporated by reference or provided in this prospectus. Aether has not authorized anyone else to provide you with different or additional information. You should not assume that the information in this prospectus is accurate as of any date other than the date set forth on the front cover.

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2,944,960 SHARES

[AETHER LOGO]

COMMON STOCK

PROSPECTUS

, 2001

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PART II

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INFORMATION NOT REQUIRED IN PROSPECTUS

ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION

The expenses to be paid by Aether Systems, Inc. ("Aether" or "Aether Systems") in connection with the distribution of the securities being registered are as follows:

	TOTAL AMOUNT (1)

Securities and Exchange Commission Registration Fee.....	\$18,988
Accounting Fees and Expenses.....	10,000
Legal Fees and Expenses.....	25,000
Printing and Engraving Expenses.....	10,000
Miscellaneous Fees and Expenses.....	1,012

Total.....	\$65,000
	=====

(1) All amounts are estimates except the SEC filing fee.

ITEM 15. INDEMNIFICATION OF DIRECTORS AND OFFICERS

Under Section 145 of the General Corporate law of the State of Delaware, Aether Systems has broad powers to indemnify its directors and officers against liabilities they may incur in such capacities, including liabilities under the Securities Act of 1933, as amended (the "Securities Act"). Aether Systems' bylaws (Exhibit 3.2 hereto) also provide for mandatory indemnification of its directors and executive officers, and permissive indemnification of its employees and agents, to the fullest extent permissible under Delaware law.

Aether's certificate of incorporation (Exhibits 3.1 and 3.3 hereto) provides that the liability of its directors for monetary damages shall be eliminated to the fullest extent permissible under Delaware law. Pursuant to Delaware law, this includes elimination of liability for monetary damages for breach of the directors' fiduciary duty of care to Aether and its stockholders. These provisions do not eliminate the directors' duty of care and, in appropriate circumstances, equitable remedies such as injunctive or other forms of non-monetary relief will remain available under Delaware law. In addition, each director will continue to be subject to liability for breach of the director's duty of loyalty to Aether, for acts or omissions not in good faith or involving intentional misconduct, for knowing violations of law, for any transaction from which the director derived an improper personal benefit, and for payment of dividends or approval of stock repurchases or redemptions that are unlawful under Delaware law. The provision also does not affect a director's responsibilities under any other laws, such as the federal securities laws or state or federal environmental laws.

Aether has entered into agreements with its directors and certain of its executive officers that require Aether to indemnify such persons against expenses, judgments, fines, settlements and other amounts actually and reasonably incurred (including expenses of a derivative action) in connection with any proceeding, whether actual or threatened, to which any such person may be made a party by reason of the fact that such person is or was a director or officer of Aether or any of its affiliated enterprises, provided such person

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acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of Aether and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was unlawful. The indemnification agreements also set forth certain procedures that will apply in the event of a claim for indemnification thereunder.

Aether has a policy of directors' and officers' liability insurance that insures Aether's directors and officers against the cost of defense, settlement or payment of a judgment under certain circumstances.

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The Underwriting Agreement filed as Exhibit 1.1 to this Registration Statement provides for indemnification by the underwriters of Aether and its officers and directors for certain liabilities arising under the Securities Act or otherwise.

ITEM 16. EXHIBITS

The exhibit index is incorporated by reference.

ITEM 17. UNDERTAKINGS

The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933, as amended (the "Securities Act");

(ii) To reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in the volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective Registration Statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (1)(i) and (1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Company pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that are incorporated by reference in this Registration Statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and

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the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Company's annual report pursuant to section 13(a) or section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Exchange Act) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In

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the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Owings Mills, State of Maryland on the 22nd day of February, 2001.

Aether Systems, Inc.

By: /s/ DAVID S. OROS

David S. Oros
Chairman and Chief Executive
Officer

POWER OF ATTORNEY

KNOW BY ALL PERSONS, that each person whose signature appears below constitutes and appoints David S. Oros and David C. Reymann, and each of them, as his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement and sign any registration statement for the same offering covered by the Registration Statement that is to be

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effective upon filing pursuant to Rule 462 promulgated under the Securities Act of 1933, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

SIGNATURE -----	TITLE -----	DATE ----
<p style="text-align: center;">/s/ DAVID S. OROS ----- David S. Oros</p>	<p style="text-align: center;">Chairman and Chief Executive Officer</p>	<p style="text-align: center;">February 22</p>
<p style="text-align: center;">/s/ DAVID C. REYMANN ----- David C. Reymann</p>	<p style="text-align: center;">Chief Financial Officer (Principal Financial and Accounting Officer)</p>	<p style="text-align: center;">February 22</p>
<p style="text-align: center;">/s/ J. CARTER BEESE, JR. ----- J. Carter Beese, Jr.</p>	<p style="text-align: center;">Director</p>	<p style="text-align: center;">February 22</p>
<p style="text-align: center;">/s/ FRANK A. BONSAI, JR. ----- Frank A. Bonsal, Jr.</p>	<p style="text-align: center;">Director</p>	<p style="text-align: center;">February 22</p>
<p style="text-align: center;">/s/ MARK D. EIN ----- Mark D. Ein</p>	<p style="text-align: center;">Director</p>	<p style="text-align: center;">February 22</p>
<p style="text-align: center;">----- Rahul C. Prakash</p>	<p style="text-align: center;">Director</p>	<p style="text-align: center;">February</p>
<p style="text-align: center;">----- Janice M. Roberts</p>	<p style="text-align: center;">Director</p>	<p style="text-align: center;">February</p>
<p style="text-align: center;">/s/ DR. RAJENDRA SINGH ----- Dr. Rajendra Singh</p>	<p style="text-align: center;">Director</p>	<p style="text-align: center;">February 22</p>

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SIGNATURE -----	TITLE -----	DATE ----
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/s/ GEORGE P. STAMAS	Director	February 22

George P. Stamas		

Robin T. Vasan	Director	February

Devin Wenig	Director	February

/s/ THOMAS E. WHEELER	Director	February 22

Thomas E. Wheeler		

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EXHIBIT INDEX

EXHIBIT NUMBER -----	DOCUMENT AND DESCRIPTION -----
*2.1	-- Agreement of Merger, dated as of October 18, 1999, between Aether Systems LLC, and Aether Systems, Inc.
*2.2	-- Stock Purchase Agreement by and among Aether Technologies International, L.L.C., Mobeo, Inc. and Peter Kibler, Winston Barrett and Edward Spear dated as of August 19, 1999.
**2.3	-- Stock Purchase Agreement by and among Aether Systems, Inc., LocusOne Communications, Inc. and the stockholders named therein dated as of January 25, 2000
+2.4	-- Agreement and Plan of Merger dated as of February 9, 2000 by and among Aether Systems, Inc., RT Acquisition, Inc. and Riverbed Technologies, Inc.
++2.5	-- LLC Interest Purchase Agreement made effective as of April 18, 2000 by and among Aether Systems, Inc., Net Search LLC and the members of Net Search, LLC and Augustine N. Esposito
++2.6	-- Share Purchase Agreement relating to IFX Group Limited
***2.7	-- Agreement and Plan of Merger by and among Aether Systems, Inc. and Cerulean Technology, Inc.
*4.1	-- Specimen Certificate for Aether Systems Common Stock
+4.2	-- Form of Indenture for Convertible Debt
+++5.1	-- Opinion of Wilmer, Cutler & Pickering as to the legality of the shares of Common Stock being registered
21.1	-- Subsidiaries of Aether Systems
23.1	-- Consent of KPMG LLP for Aether Systems, Inc.
23.2	-- Consent of PricewaterhouseCoopers LLP
+++23.3	-- Consent of Wilmer, Cutler & Pickering, included in Exhibit 5.1
23.6	-- Consent of KPMG LLP for LocusOne Communications, Inc.
23.7	-- Consent of KPMG LLP for Riverbed Technologies, Inc.

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- * Incorporated by reference to the Registration Statement (File No. 333-85697) on Form S-1 filed with the Commission on October 20, 1999, as amended.
- ** Incorporated by reference to the Form 8-K filed with the Commission on February 15, 2000.
- *** Incorporated by reference to the Registration Statement (File No. 333-44566) on Form S-1 filed with the Commission on September 7, 2000, as amended.
- + Incorporated by reference to the Registration Statement (File No. 333-30852) or Form S-1 filed with the Commission on February 22, 2000, as amended.
- ++ Incorporated by reference to the Form 10-Q filed with the Commission on August 14, 2000.
- +++ To be filed by amendment.