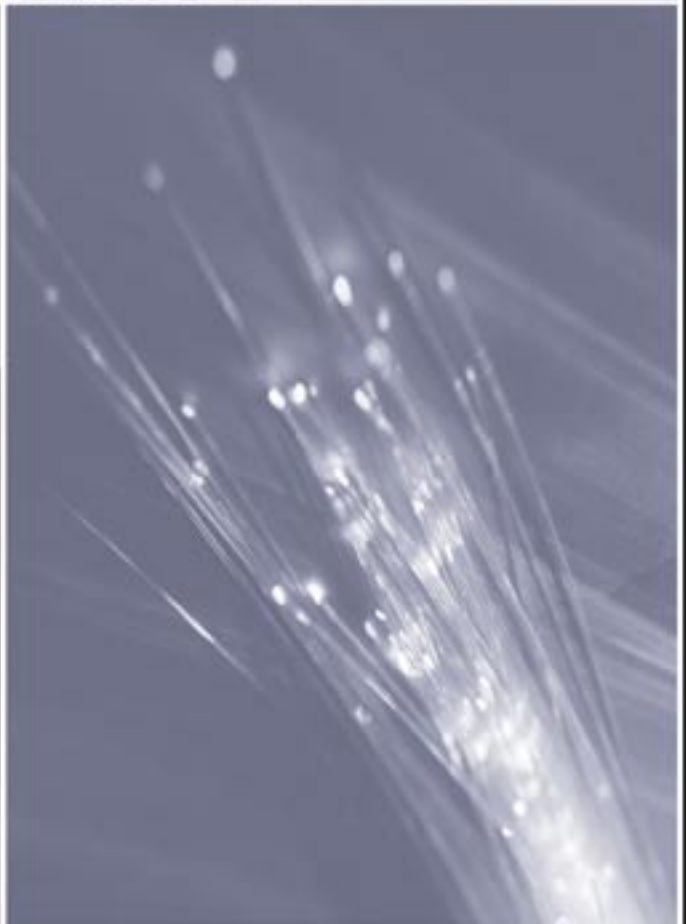


Building a 21st Century Telecom Infrastructure

Lower Manhattan Telecommunications
Users' Working Group
Findings and Recommendations

August 2002



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Overview

On September 10th 2001, Lower Manhattan stood not only as the financial capital of the world, but also the telecommunications capital of the world. With billions of dollars invested in optical fiber, routers and switches, several distinct and separate options for true redundancy, and “honeycombed” fiber optic cable running under virtually every street and into virtually every major building, Downtown was the location for businesses serious about a cutting-edge and reliable telecom infrastructure.

However, the terrorist attacks of September 11th resulted in significant telecommunications outages in Lower Manhattan. In response, the Alliance for Downtown New York (Downtown Alliance), the Association for a Better New York (ABNY), the Real Estate Board of New York (REBNY), and the New York Building Congress (NYBC) formed a Lower Manhattan Telecommunications Users’ Working Group consisting of senior telecom executives from Downtown’s leading companies including:

- American International Group (AIG)
- The Bank of New York
- Brown Brothers Harriman
- Deutsche Bank
- Goldman, Sachs & Co.
- Guardian Insurance
- Federal Reserve Bank
- New York Mercantile Exchange
- New York Stock Exchange
- Morgan Stanley
- Rudin Management Co
- Standard & Poors
- Sullivan & Cromwell

The Working Group was charged with identifying the telecommunications weaknesses revealed by the September 11th attacks and developing a strategy for making Lower Manhattan’s telecom infrastructure more secure, redundant, and reliable than ever before.

The Working Group developed a document that outlined the 17 services that Lower Manhattan’s companies need and desire from their telecommunications providers (see appendix A for *Requirements Document* sent to carriers February 2002). Over the last six months, the Group met with 14 of the country’s leading telecommunications companies (see appendix B for list) and asked each to explain which of the required services it was currently able to offer customers in Lower Manhattan and which ones it was planning to provide in the future. In addition, the Group asked each telecom company to discuss what happened to its network on 9/11 and what plans it is making or has made to correct problems encountered on that day. The Group synthesized all of this information and has prepared this report of findings and recommendations.

A state-of-the-art and resilient telecommunications infrastructure is essential to Lower Manhattan’s vitality in the 21st Century and must be a key component of the rebuilding process. Such a foundation will allow America’s financial center to do what it does best – act as the financial engine for ingenuity and economic growth for the world.

Findings

1. **The telecom outages suffered in Lower Manhattan after the attacks were a result of an under-appreciation of potential failure points rather than a deficient telecom infrastructure.**
 - a. ***Virtually all of the post-9/11 telecom outages in Lower Manhattan resulted from the collapse of World Trade Center 7 onto Verizon's Central Office at 140 West Street.*** As Verizon does not offer Central Office redundancy as part of its standard service, their customers that were served out of this Central Office lost their telecom services. In addition, customers of other carriers that leased Verizon's fiber optic cable and facilities at 140 West Street to serve their customers and didn't have redundant options also suffered outages.
 - b. ***Local telecom carriers have done an extraordinary job recovering and rebuilding.*** Not only did Verizon, the Incumbent Local Exchange Carrier, quickly restore data and voice service after the attacks to its nearly 35,000 affected Downtown customers, but the company is also taking the opportunity to upgrade switches and lay 45 miles of additional fiber in Lower Manhattan between its multiple Central Offices for additional reliability. In addition, other carriers, including AT&T, which lost its entire Central Office at 2 World Trade Center, have rapidly restored their services that were also lost after the attacks. In total, almost \$2 billion will be spent rebuilding and upgrading Lower Manhattan's telecom infrastructure.
 - c. ***Lower Manhattan is now served by six distinct options for network redundancy.*** Downtown is currently served by six distinct fiber optic networks: AT&T, Con Edison Communications, MCI Worldcom, MFN, Time Warner, and Verizon. As each company has its own fiber optic cable, switches, Central Offices, and SONET ring, businesses in Lower Manhattan currently have more options for true network redundancy than in virtually any other central business district in the nation.
 - d. ***Telecom executives at Lower Manhattan companies are now significantly better prepared for the next unexpected disaster.*** Downtown's telecom executives learned important lessons from outages suffered after the September 11th attacks and now better appreciate the limits of Verizon's service and understand that carrier redundancy does not necessarily mean true redundancy.
2. **Lower Manhattan's telecommunications infrastructure is still among the world's best and is now more redundant, resilient, and reliable than before the attacks of September 11th.**
 - a. ***Before September 11th, Lower Manhattan's infrastructure was among the world's best.*** As the financial capital of the world, Lower Manhattan was the telecommunications capital of the world. With several distinct and separate options for true redundancy, "honeycombed" fiber optic cable running under virtually every street and entering virtually every major building, the area was the location for businesses serious about a reliable, redundant, and cutting-edge-telecom infrastructure.
 - b. ***Local telecom carriers have done an extraordinary job recovering and rebuilding.*** Not only did Verizon, the

3. **The “first mile” is the key to the resiliency of a Downtown business’ telecom network.**
 - a. ***While it can be difficult and costly to create redundancy in the “first mile” between a Downtown business’ facilities and its carriers’ Central Offices, it is vital to the reliability of the business’ telecom network that such redundancy is established.*** Virtually all of the carriers connect their Central Offices in a ring, which in turn connects to the internet backbone at several points. This provides a relatively resilient method of ensuring a continuity of service: if one node fails, the traffic redirects and enters the internet backbone at another point. A greater challenge for Downtown businesses is the “first mile”, or “local loop”, between their facilities and their carriers’ Central Offices: it can be extremely difficult and costly to make this first mile redundant as well. Nonetheless, such redundancy is vital to the reliability of a Downtown business’ telecom network.
 - b. ***Property owners play a key role in providing telecom reliability.*** As a significant portion of a network’s “first mile” resides on their property, property owners stand in good position to aid the reliability of their tenants’ telecom networks. It is essential for property owners to understand that a multiple choice of carriers is attractive to existing and prospective tenants and that they play a crucial role in creating the facilities necessary for this to be achieved.
4. **Downtown’s companies want additional options that are carrier-neutral and distinct from Verizon.**
- a. ***By providing carrier-neutral fiber, carriers such as Con Edison Communications are emerging as providers of an opportunity for Downtown businesses to diversify their networks.*** After suffering service outages in the aftermath of September 11th, Downtown businesses want additional network options that are carrier-neutral as well as distinct from Verizon. Newer carriers such as Con Edison Communications, with carrier-neutral fiber running through an entirely different conduit system, offer an opportunity for Downtown businesses to make their telecom networks more redundant and therefore more resilient.
5. **14 of the 17 specific service requirements outlined by the Working Group are offered in Lower Manhattan by one or more telecom carriers on a satisfactory basis:**
 - ✓ *A diverse¹, redundant², transparent³, manageable⁴ and scalable network⁵*
 - ✓ *Data and voice service using fiber end-to-end.*
 - ✓ *A ring connected to multiple Central Offices (COs) and Points of Presence (POPs)*
 - ✓ *The option for separate and distinct voice and data services*
 - ✓ *Data and voice service with redundancy and diversity at the multiplexer (mux)*
 - ✓ *Data and voice service with redundancy and diversity at the conduit/manhole*
 - ✓ *Data and voice service with redundancy and diversity at the switch*
 - ✓ *Data and voice service with redundancy and diversity at the shelf*
 - ✓ *Wireless service that is separate and distinct from terrestrial service*

¹ A network is diverse if there are at least two distinct pathways for every action

² A network is redundant if there is a duplication of every piece of equipment

³ A network is transparent if end-users cannot detect transmission differences

⁴ A network is manageable if the end user can manage its own telecom services

⁵ A network is scalable if a customer can increase or decrease the amount of data it transmits

- √ *Wireless service with redundant and diverse connectivity*
- √ *Direct Inward Dialing with a redirect option for both terrestrial and wireless service that provides a seamless option, if service fails, for all critical internal calls as well as for all outbound local and long distance calls*
- √ *Delineated technical specifications for all voice and data services including identification of frequencies for wireless services*
- √ *Teleworking capabilities that enable employees and customers to work from a remote location with both voice and data service*
- √ *Identified and delineated disaster recovery services*

6. **Of the 17 specific service requirements outlined by the Working Group, only three will not be satisfactorily met by carriers, as the prospect for return on investment is not great enough:**

- a. **Multiple entrances into and out of each building.** Many buildings in Lower Manhattan only have one point of entry for telecommunications services. This creates a single point of failure that leaves the building's tenants vulnerable to telecom service outages in the event of another unexpected disaster. However, carriers will not absorb the costs necessary to alleviate this failure point and believe that they are unable to pass costs along to individual customers.
- b. **Multiple, carrier-neutral risers in each building.** Most telecom customers in Lower Manhattan are served with a single, dedicated, carrier-specific riser in their building. It tends to lack redundancy and is costly to install and time-consuming to repair. However, carriers are unwilling to absorb

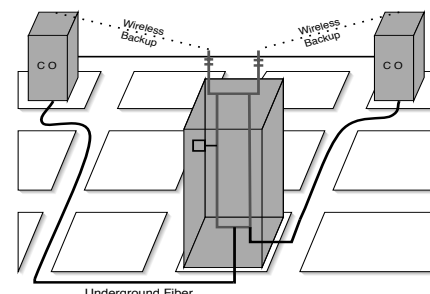
the costs necessary to alleviate this failure point and believe that they are unable to pass costs along to individual customers.

- c. **An "off-the-shelf" solution with Central Office redundancy.** Currently Verizon and several other carriers serve standard customers by running all of their telecommunications services through one local Central Office. This creates a single point of failure that can cause widespread service outages when it fails like it did on September 11th. However, Verizon and others are not willing to make the significant investments necessary to offer a standard service with true CO redundancy. This service requirement is available to tenants at significant additional cost as part of a customized, premium service.

7. **New technology presents the opportunity to enhance the reliability and redundancy of Downtown's telecom infrastructure.**

- a. **Free Space Optics offers a low-cost opportunity for wireless, overlaid redundancy at near gigabit speeds.** Initially developed for point-to-point communication over the Berlin Wall by the U.S. Military, Free Space Optics enables a business to transmit data, at near gigabit speed, over a focused beam of light from its offices to another point. The technology now presents an additional, wireless redundancy option for Downtown businesses in the event that terrestrial communication is severed.

Diagram of an Ideal Wireless Backup



CO = Central Office

Recommendations

Lower Manhattan's telecommunications infrastructure is significantly better prepared for the next disaster than it was on September 11th. However, this is no time for the area to rest on its laurels. If Downtown is going to remain the financial capital of the world, its telecommunications infrastructure must, like the leading companies it serves, shine as an example to the rest of the world. To achieve this, the Working Group recommends the following:

1. **Help tenants become better customers of telecom services.** The reliability of Lower Manhattan's telecom infrastructure can be improved by making area companies more sophisticated customers of telecom services.
 - a. ***The Downtown Alliance should work with ABNY to educate tenants through workshops and guides.*** Workshops should be held and guides should be published that explain what telecom reliability is, how a company can purchase it, how much it should cost, as well as the need for adequate disaster and backup plans.
 - b. ***The City of New York should work with the private sector to create a secure mechanism for tenants to understand a carrier's path to its Central Offices.*** For both security and business concerns, carriers are hesitant to disclose the exact route a customer's data takes to the Central Office. However, in order to be assured that a single point of failure does not exist and therefore its telecom services are reliable, a customer must be certain that distinct routes are taken. In addition, many businesses want to know the route their data takes in order

to recognize, in advance, if an event that occurs somewhere else in the city, such as a fire or an accident, could affect their telecom services. A central and secure repository of such route information would benefit both parties and should be explored collaboratively by telecom providers, telecom customers, and relevant City and State agencies. The City currently collects route information from all of the Telecom carriers serving Lower Manhattan with the exception of Verizon (Verizon is not subject to franchise requirements). While this information is currently subject to confidentiality agreements, it could potentially provide a starting point for the information that should be shared. In addition, the New York City Metropolitan Area Mutual Aid and Restoration Consortium (MARC) can provide a model of how such a sharing of information could be effectively coordinated. Arising out of a public-private mayoral Task Force and consisting of representatives from each of the telecom providers serving customers in New York City, MARC is a formal mechanism for providers to help each other restore service more quickly in the event of an emergency by sharing facilities, information, and expertise.

MARC proved to be an invaluable part of the recovery effort in the weeks after 9/11 and can serve as a model for how telecom providers can work with the public and private sectors to enhance the reliability of service in Lower Manhattan.

2. **Educate the public about the quality of Downtown’s telecom infrastructure and proactively demonstrate that Downtown and its telecom infrastructure are truly open for business.**

After work by Verizon, Con Edison, AT&T and other carriers, Lower Manhattan’s telecom infrastructure is now significantly more reliable and robust than it is widely perceived to be. The following efforts to align perceptions with reality should be made.

a. ***The Downtown Alliance and REBNY should reach out to real estate brokers.***

Brokers can convey to prospective tenants that Downtown has the best telecom options in Manhattan, with more fiber and Central Offices per block than Midtown or any other area of the City.

b. ***The Downtown Alliance should publicize the Wireless Local Area Network (WLAN) based on the 802.11b standard it has established in Bowling Green.***

The Downtown Alliance has established a network that enables anyone to wirelessly connect to the internet while in the Bowling Green Park. The network not only provides a tremendous benefit to area employees, but it also raises Lower Manhattan’s profile as an area for companies serious about the telecommunications.

c. ***The Downtown Alliance should explore extending a WLAN northward throughout Lower Manhattan.*** Extending the network throughout the

business district would provide an even greater benefit to area companies and further demonstrate the quality of Downtown’s telecom infrastructure.

3. **Help property owners make necessary improvements to their buildings.**

As the costs to establish multiple entrances into each building and multiple, carrier-neutral risers inside each building are often too onerous for one telecom provider or tenant to undertake single-handedly, costs will need to be spread across multiple tenants. Consequently, these improvements can be implemented on a building-by-building basis most easily and most effectively by property owners.

a. ***REBNY, the Downtown Alliance and NY Building Congress should educate property owners through workshops.***

Workshops should be held that explain the benefits of upgrading a building’s telecom infrastructure, what and how specific improvements should be made, and how the costs can be shared by tenants.

b. ***The City of New York should expand incentives available to property owners that upgrade their building’s telecom infrastructure.***

Currently, improvements to a building’s telecom infrastructure fall under the Industrial & Commercial Incentive Program (ICIP) and the Lower Manhattan Revitalization Program (LMRP). If the cost to upgrade a building’s telecom infrastructure is greater than 20 percent of a building’s assessed value, the property owner is granted a 12 year exemption from the taxes associated with the increase in assessed value. However, in Lower Manhattan, the cost to upgrade a building’s telecom infrastructure is typically less than 20 percent of a building’s assessed

value. That is, the cost to equip an average building in Lower Manhattan with a state-of-the-art telecom infrastructure, including an additional Point Of Entry, dual carrier-neutral risers, and a wireless contingency system on the roof, is approximately \$250,000 and the assessed value of virtually every Downtown building is greater than \$1,250,000. As a result, only 2.3% of the commercial office space in Lower Manhattan is located in buildings incentivized under this program to make telecom improvements¹. Therefore, a waiver of the 20% threshold for telecom improvements should be explored. Furthermore, as the increase in assessed value due to telecom upgrades tends not to be large, the tax exemption under the ICIP/LMRP program may not sufficiently incentivize property owners to make the necessary telecom investments. Therefore, perhaps a better policy for the City to consider is a tax credit for telecom infrastructure investments.

- c. ***The Downtown Alliance and REBNY should create a database of telecom capabilities for Downtown's buildings.*** Currently no formal mechanism exists for evaluating the reliability of a building's telecom infrastructure. Such a system would enable tenants to make more educated location decisions and reward building owners that make investments.
- d. ***REBNY should create a New York-specific version of the national generic building access license agreement.*** It typically takes 6-18 months for a building owner and a carrier to come to

terms on a building access agreement for property in Lower Manhattan. A generic New York-specific license agreement could provide a reasonable starting point and significantly accelerate this process. The Real Estate Roundtable and Building Owners and Managers Association (BOMA), a national organization, have prepared a generic license agreement that can serve as a template.

- 4. **Urge telecom carriers to provide additional services that will enhance the reliability of Downtown's telecom infrastructure.** Lower Manhattan's businesses want the ability to purchase telecom services that are more reliable and more redundant than the standard services they could buy before September 11th.
 - a. ***Telecom carriers should offer redundancy at the Central Office as an option in their standard package.*** Virtually all of the telecom outages in Lower Manhattan after September 11th were due to a lack of redundancy at the Central Office; when Verizon's Central Office at 140 West Street failed, much of the data that ran through it did not have another distinct route between Downtown's businesses and the larger backbone. Telecom carriers serving Lower Manhattan, in particular Verizon, should upgrade their infrastructure to add Central Office redundancy as an option in their standard package. Currently, several carriers serving Downtown including AT&T and Paetec Communications offer Central Office redundancy as part of their standard service.

¹ As the assessed value of virtually every office building in Lower Manhattan is greater than \$15 per square foot, telecom upgrades in any building with more than 83,000 square feet ($1.25 \text{ million} / \$15 = \sim 83,000$) will not meet the 20% minimum threshold requirement for benefits under the program. Only 2.3% of the commercial office space Downtown is located in buildings with fewer than 83,000 square feet.

- b. ***When placing new or additional cable in Lower Manhattan, Telecom carriers should only use fiber-optic cable.*** Fiber-optic cable can transmit much more information than copper and is significantly more scalable. In addition, if it is severed or damaged, fiber can be fixed or replaced more rapidly.
 - c. ***The City of New York should issue a Request for Proposal (RFP) for carrier neutral laterals between individual buildings and the fiber optic cable under most of Lower Manhattan's major streets.*** It costs approximately \$200,000 to run a lateral, or a connection, between the large fiber optic cables running under most of Lower Manhattan's streets and an individual building. Most laterals are built by individual carriers and are placed only after a large customer in the building agrees to a service contract and thereby justifies the investment. Such an arrangement gives Downtown businesses, especially smaller ones, less choice of carriers and often fewer options for redundancy. The City of New York is planning to issue a RFP for carrier-neutral laterals. As such laterals would enable carriers to split the necessary investment over many potential customers and would provide tenants with additional options for redundancy, the City should move forward and issue this RFP. In addition, the City should consider adding a stipulation to the proposals that requires laterals to be built in tandem, that is, if a carrier builds a lateral to an individual building, it must build another distinct, redundant one as well.
5. **Prepare wireless emergency contingency plans.** No matter how reliable the local telecommunications infrastructure is and how much advance planning is done, the potential for another unexpected disaster unfortunately always exists. Lower Manhattan should differentiate itself from other central business districts by preparing, in advance, for this possibility.
- a. **Carriers should work with the Downtown Alliance and ABNY to develop plans for a wireless emergency back-up system.** If the terrestrial communication is severed, a wireless back-up could be used to maintain services in Lower Manhattan. In order to limit service downtime, a detailed plan including costs and logistics for such a service should be created and presented to the Lower Manhattan Development Corporation and the City for potential funding. Plans should also be developed for "crash kits" that include all of the equipment and information (eg. the coordinates of the wireless receivers) necessary for a business to quickly access the wireless backup system in the event of an emergency.
 - b. ***The Downtown Alliance should work with property owners to make area roof tops available to wireless carriers.*** Area roof tops will be needed to enable a wireless contingency plan.
6. **The City should establish and chair a Lower Manhattan Telecommunications Task Force to ensure that initiatives to bolster Downtown's telecom infrastructure are implemented quickly and effectively.** An ongoing task force consisting of representatives from City government, telecommunications providers, as well as Lower Manhattan property owners and commercial tenants should be convened. This task force should be charged with ensuring that the recommendations outlined in this report are successfully implemented

and continued attention is paid to ensuring that Lower Manhattan's telecom infrastructure is the world's best.

- 7. The Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey should include Telecom guidelines in plans for rebuilding at the former World Trade Center site.** Initial development guidelines issued by the LMDC and the Port Authority for the former World Trade Center site include forward-looking design goals such as energy efficiency. Equally as important is a resilient Telecom infrastructure. Therefore, LMDC and the Port Authority should broaden the final design guidelines to include the design goal of "state-of-the-art telecommunications reliability" and should ensure that the final plans for each new building include dual points of entry, dual carrier-neutral risers, and a wireless contingency system on the roof.

Summary of Responsibilities and Plan of Action

The Working Group identified five groups – Telecom Carriers, the City of New York, the Lower Manhattan Development Corporation, Real Estate Board of New York (REBNY), and the Downtown Alliance – that can and should take action to improve Lower Manhattan’s telecom infrastructure:

Telecom Carriers

1. Offer redundancy at the Central Office as an option in standard packages.
2. Work with Downtown Alliance and ABNY to develop plans for a FSO/ wireless emergency back-up system.
3. When replacing and adding additional fiber, only use fiber-optic cable.

City of New York

1. Expand incentives available to property owners that upgrade their building’s telecom infrastructure.
2. Explore creating a secure mechanism for tenants to understand a carrier’s path to its Central Offices.
3. Issue a Request for Proposal for carrier-neutral laterals between individual buildings and the fiber optic cable running under most of Downtown’s streets.
4. Establish a Lower Manhattan Telecommunications Task Force to ensure that initiatives to bolster Downtown’s telecom infrastructure are implemented quickly and effectively.

Lower Manhattan Development Corporation

1. Include Telecom guidelines in plans for rebuilding at the former World Trade Center site.

REBNY

1. Work with the Downtown Alliance and the NY Building Congress to organize workshops that educate property owners on telecom issues.
2. Create a New York-specific version of a generic building access license agreement.
3. Work with the Downtown Alliance to reach out to real estate brokers and explain the telecom strengths of Lower Manhattan in relation to other areas.

Downtown Alliance

1. Work with REBNY on a database of telecom capabilities for Downtown’s buildings.
2. Work with ABNY to organize workshops and develop guides that make tenants better telecom customers.
3. Work with property owners to make roof tops available for an overlaid, wireless contingency system.
4. Publicize the WLAN (Wireless Local Area Network) in Bowling Green.
5. Explore extending a WLAN network northward throughout Lower Manhattan.

A CALL TO REBUILD THE TELECOMMUNICATIONS INFRASTRUCTURE OF LOWER MANHATTAN

The Problem

The attack on America on September 11, 2001 revealed severe weaknesses in Lower Manhattan's telecommunications infrastructure. The area's infrastructure was predominantly copper based, non-redundant and fraught with single points of failure. In the aftermath of September 11th, current and potential customers are demanding that companies create an infrastructure plan that will not allow service failure. We must work together to insist that all service providers in our area step with us to this challenge.

This is a challenge that most individual companies cannot adequately address alone. A comprehensive strategy that combines a carrier-neutral, optically lit fiber network integrated with a microwave/infrared wireless network must be developed and shared with existing and future Downtown business. This strategy is essential to reassure current tenants and convince new tenants that Downtown is a good place in which to conduct business. Without this type of infrastructure in place, Downtown Manhattan's role as the financial center of the world could be undermined. a good place in which to conduct business. Without this type of infrastructure in place, Downtown Manhattan will lose its position as the Financial Center of the World.

The Solution

A series of diverse, optically lit, carrier-neutral and carrier-specific networks integrated with a broadband wireless network must be designed and built. These networks will allow Downtown tenants to have access to a multiple choice of carriers with diverse pathways that can route and reroute voice and data to and from customers. Diverse routes of entry into buildings and off rooftops will be the key aspect of this design. Carrier-neutral backbones within buildings will act as the "on-ramp" to this new design. Companies will have a choice of carriers; carriers will have a "just plug in" pre-built network; and property owners will have clean, manageable risers that will keep their buildings competitive well into the 21st Century. In addition, these changes will provide a seamless solution for our customers for voice and data needs.

A state-of-the-art telecommunications infrastructure will demonstrate that Wall Street is open for business and more secure and redundant than ever before. And it will allow America's financial center to do what it does best – act as the financial engine for ingenuity and economic growth for the world. Productivity depends upon an operating free market system that accesses global markets. In turn, access to these markets depends upon a reliable, efficient local telecommunications network. Our goal is to design – and see built – the telecommunications backbone for a new and improved Downtown New York.

Action Plan

The Alliance for Downtown New York, the Association for a Better New York, the Real Estate Board of New York, the New York Building Congress and Rudin Management have formed a Lower Manhattan Telecommunications Working Group. This group consists of senior telecom executives from downtown companies including those in the financial services, insurance, legal and real estate arenas. This group has developed a "Requirements Document" (see enclosed). This document is intended to outline the design of what these companies require from the carriers with which they do business. This outline will be sent to all telecom companies currently doing business in New York and those who wish to in the future. These carriers will then respond back to the Telecom Users Group describing how they want to assist in creating these networks. Individual meetings will then be set up with the Working Group and those carriers interested in participating.

Requirements Document

This document will be broken down into three main areas:

1. ***Voice:***
 - a. ***Terrestrial***
 - b. ***Wireless***
2. ***Data:***
 - a. ***Terrestrial***
 - b. ***Wireless***
3. ***Teleworking***

We are interested in seeing responses that focus on network transparency, manageability, scalability, and redundancy. We are also concerned about diversity between central offices. The overall goal is to assure our customers that the networks we have access to will allow us to operate regardless of the conditions in the streets.

1. **Voice Services:**

- a. Terrestrial - Voice services must be redundant with separate and diverse cable entrances entering the building as well as diverse paths to the customer premises and to separate central offices leaving the building. Disaster recovery services should be delineated and identified. More specifically, there must be guarantees from all carriers that the delivery of service is diverse. This delivery must include diversity at the shelf, switch, central office, manhole, entrance to the building, mux and riser components. Direct Inward Dialing must be offered with a redirect option available. This option must provide fail over option for all critical DID calls. It should also include a seamless fail over option for outbound local and long distance calls.

- b. Wireless - Wireless voice services must be separate and distinct from terrestrial carriers. Rooftop connectivity must have redundancy and diversity to at least two other buildings. Wireless technology being utilized must be delineated (FSO, microwave, GPRS, iDen, 3G Wireless) with the specific frequencies used identified. Technical specifications relating to FSO must be outlined. Direct Inward dialing must be offered with a redirect option available. This option must provide a fail over option for all critical DID calls. It should also include a seamless fail over option for outbound local and long distance calls. Additionally, all vendors should provide solutions from the downtown Wall Street buildings directly to New Jersey.

2. **Data Services:**

a. Terrestrial – Data service must be separate and distinct from voice cabling and fed from diverse entrances into the building. Cable entrances must feed different Central Offices. All data services should be via fiber. Street routing must be on a ring connected to multiple POPs or CO's. More specifically, there must be guarantees from all carriers that the delivery of service is diverse. This delivery must include diversity at the shelf, switch, central office, manhole, and entrance to the building, mux and riser components

b. Wireless – Data service must be separate and distinct from terrestrial carriers. Rooftop connectivity must have redundancy and diversity to at least two or other buildings. Wireless technology being utilized must be delineated (FSO, microwave) with the specific frequencies being used identified. Technical specifications relating to FSO must be outlined. All vendors should provide solutions from the downtown Wall Street buildings directly to New Jersey.

3. **Teleworking:**

Provide a solution that enables us, when appropriate, to provide our employees and/or customers with the ability to work from a remote location. This solution must include access to voice and data services.

Participating Telecommunications Carriers

Over the last five months, the Working Group met with many of the country's leading telecommunications companies including:

- AT&T
- Broadwing Communications
- Con Edison Communications
- Focal Communications
- Giantloop
- Lexent
- Lightpointe Communications
- Metromedia Fiber Network (MFN)
- Paetec Communications
- Qwest Communications
- Rockefeller Group
- Terabeam
- Time Warner
- Verizon

The Group asked each telecom company to discuss what happened to its networks on 9/11 and what plans it is making or has made to correct problems encountered on that day. The Working Group also asked each company to explain which of the 17 required services it was currently able to offer customers in Lower Manhattan and which ones it was planning to provide in the future.

In addition, the Group met with the NYC Department of Information Technology and Telecommunications (DoITT).

Participating Organizations

Alliance for Downtown New York, Inc. (Downtown Alliance)



The Alliance for Downtown New York Inc. manages the Downtown Lower Manhattan Business Improvement District (BID). The Downtown Alliance serves an area roughly from City Hall to the Battery, from the East River to West Street, for which it provides supplemental sanitation and security, economic development, streetscape and transportation improvements, marketing and enhanced tourist services.

It is the mission of the Downtown Alliance to create and promote a safe, clean, live-work, totally wired community, which showcases the nation's most historic neighborhood and serves as the financial capital of the world for the twenty-first century.

Association for A Better New York (ABNY)



ABNY's mission is to bring New Yorkers together and help create "A Better New York." ABNY is a New York phenomenon – everywhere at once, taking on the toughest problems, bringing people together to reach consensus and get results.

Real Estate Board of New York (REBNY)



The Real Estate Board of New York is the industry's leading trade association in the city. The Board's membership includes approximately 5,500 owners, builders, brokers, managers, banks, insurance companies, pension funds, real estate investment trusts, utilities, attorneys, architects and other individuals and institutions professionally involved in Manhattan realty. The Board also speaks for the industry before government bodies and in the arena of public opinion, and conducts various professional education programs, including state-certified requirement courses for licensing in some specialties. In addition, REBNY carries on an extensive agenda of research projects, maintains the largest collection of real-estate-related information of any city trade association, and is a vital force in civic and philanthropic affairs.

New York Building Congress



The New York Building Congress, a broad-based membership association celebrating its 81st year, is committed to promoting the growth and success of the construction industry in New York City and its environs.

The Building Congress provides a unique forum to advance an industry-wide agenda focusing on economic and infrastructure investment, job creation and professional exchange. These goals require the dedicated involvement and cooperation of the contractors, architects, engineers, unions, real estate managers, developers and owners who comprise the building community.