Cogent Communications User Guide

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I. Overview

Thank you for choosing Cogent Communications as your Internet service provider!

The Cogent User Guide has been designed to address all the information needs that may arise with your Cogent Network services. Whether you have a question concerning installation, maintenance or customer support, you will find the Cogent User Guide a valuable "one stop" resource that addresses all your questions. We urge you to read the User Guide in its entirety; however, each section is designed to standalone so that you can quickly find an answer to any given topic.

Mission

Cogent's mission is to simplify the delivery and lower the cost of high-bandwidth Internet access and/or transport services by providing non-oversubscribed, dedicated broadband access to businesses.

The Cogent Network

At Cogent Communications, we provide a state-of-the-art service offering that combines optical technologies with Internet protocols to provide reliable 100 and 1000 Mbps Internet services. By owning and managing our own network, you benefit from the complete control we maintain over service, quality and cost.

II. Acceptable Use Policy

The most current version of the Acceptable Use Policy can be found at http://www.cogentco.com/policy Please read the entire contents before your service is installed. The Acceptable Use Policy applies to all persons and entities using the products and services of Cogent Communications, Inc. It discusses uses that are prohibited, abusable resources, enforcement and confidentiality/privacy issues.

If you are unsure of whether any contemplated use or action is permitted, please contact Cogent at abuse@cogentco.com or (877) 7COGENT. (877-726-4368)

Your Service Delivery Specialist will also be able to answer any questions you may have.

III. Installation Process

Your Service Delivery Specialist

Your Cogent Service Delivery Specialist will be your single point of contact during the provisioning process of your service. He or she is trained and experienced in service implementation. Your Service Delivery Specialist will facilitate a smooth installation of your Cogent service and will remain in contact with you to ensure your service is delivered in a timely manner. All concerns regarding service activation should be directed to your Service Delivery Specialist.

In the event you are dissatisfied with your Service Delivery Specialist, please email your concerns to William Kruger at wkruger@cogentco.com.

The Installation Process

1. Your order is placed and entered into the Cogent order-tracking database.

2. A Service Delivery Specialist is assigned to your order.

3. Your Service Delivery Specialist will contact you and verify your order.

4. This User Guide is sent to you.

5. An IP Questionnaire (http://www.cogentco.com/Guide/IPAlloc/) will be sent to you and will require completion by you and approval by Cogent prior to beginning your service implementation. It is strongly encouraged that you follow the detailed instructions of the IP Questionnaire. This step is normally the most time-intensive step in the provisioning process and thus requires more attention.

6. A port on the Cogent equipment is requested and assigned.

7. The cross-connect from your suite to the Cogent equipment within your building is ordered (in non-colocation configurations).

8. Domain name requests or transfers are processed.

9. IP address allocation requests are made on the basis of your justification.

10. The IP addresses allocated to you will be provided.

11. The Cogent port will be configured.

12. DNS tables will be requested from you and processed into the DNS server.

13. The cross-connect is put in place and tested.

14. Your IP addresses are set-up to be routed to your network.

15. Services are handed off to you via email upon successful turn-up and Cogent's acceptance of testing criteria.

16. At the end of the provisioning cycle, you must ensure that all your equipment is prepared to receive Cogent service. If you are not prepared, Cogent will maintain your port and IP addresses and then advise our Network Operations Center (NOC) that your equipment is not on the circuit. Please notify the NOC when you connect your equipment to the circuit. The NOC contact information will be sent to you via email and billing will commence. It is important that you understand that the billing cycle commences at the time Cogent's provisioning cycle is completed (i.e., when the port has been successfully tested).

17. BGP customers must be prepared to support BGP during the Cogent turn-up phase. If they are not, Cogent will provide the circuit as a static route and hand it over to the BGP customer as such.

Fast Ethernet Configuration

Your device should be configured as follows:

- Full Duplex
- 100 Mbps
- Auto negotiation capabilities or Auto Detect feature: Disabled or Off

GigE Configuration

Your device should be configured as follows:

- Full Duplex
- 1000 Mbps
- Auto negotiation capabilities or Auto Detect feature: Disabled or Off

Fiber500 Configuration

Your device should be configured as follows:

- Half Duplex
- 10 Mbps

IV. Cogent Interoperable Hardware

Fast Ethernet

The Cogent Network is predominantly comprised of Cisco routers and equipment. Consequently, Cisco switches or routers with a 10/100 or Fast Ethernet port can be expected to operate with our network. Other vendor equipment that is compatible with Cisco equipment is also expected to work with the Cogent Network. Cogent has tested various pieces of equipment for compatibility and will be testing additional pieces in the future.

Customers connecting with hubs should be aware that hubs, by definition, cannot run full duplex, which means the bandwidth of the connection will be artificially limited at the customer's site. Cogent will not be able to reliably connect to a half duplex piece of equipment.

Fiber500

Cogent Communications suggests that the customer equipment obtained, by the customer, supports 10 Mbps. Please consult your vendor for specific make, model, and equipment configuration.

V. Cogent Router Policy

Cogent Communications requires all wholesale customers or any customer with a /25 or larger, to have a router. This enables Cogent to improve monitoring capabilities and offer better customer support.

Monitoring Capabilities

If a customer uses a switch, Cogent needs to ping (ICMP) a host machine, which is less reliable than a router, which gives a definitive point (IP) for Cogent to monitor. For example, if a customer uses a switch and a host machine goes down, whether planned or unplanned, the line will appear down even if the other servers are up. With a router, Cogent immediately knows that the customer is unreachable. Therefore, routers allow for better accuracy in troubleshooting and thus better customer support.

In order for Cogent to honor the Guarantees and Service Credits provided in any Service Level Agreement, Customer Service Agreement or other type of performance level agreement that you currently have with Cogent Communications, you must allow our monitoring systems to reach the monitored host, whether it be your router interface or host IP. The Cogent monitoring systems are in the IP range as follows: 66.28.3.0/24 and 66.250.250.0/23

VI. Customer DNS Information

Introduction

The Domain Name System (DNS) is a distributed database throughout the Internet used for translating names of network nodes into IP addresses and vice versa, and also provides other name-based information such as where to send mail and whom to contact with issues concerning nodes or domain names. In order for Cogent to provide accurate DNS service, please fill out the DNS Questionnaire (http://www.cogentco.com/Guide/IPAlloc/DNS.txt). The DNS Questionnaire is text formatted so you can directly fill in the information and either email the attachment or directly past into email.

DNS Servers

Resolving/caching name servers are used to look up DNS information, such as the location (IP address) of a host on the Internet. The IP addresses of the caching servers will need to be configured into each computer on your network or into a DHCP server that will give this information to the clients that connect to it.

Determine your business location in the table below to set up the primary and secondary name servers that you should use. When configuring your machines to point to the following name servers, they should be listed in the order given below with primary first and secondary next.

Name servers for configuring customer machines (for resolving)

Location	Primary IP Address	Secondary IP Address
East of Mississippi	66.28.0.45	66.28.0.61
West of Mississippi	66.28.0.61	66.28.0.45

Your Domain Name

Cogent can provide Primary or Secondary name service for domain names that you own and use. There is no fee for Cogent to host the first ten of your domain names. Thereafter, there is a one-time $500 fee for each set of up to ten domain names. This one-time fee is used to maintain the hardware for the domain name servers and to cover their administration costs. Cogent is not responsible for any fees payable to the registrars that are associated with your domain name (e.g., registration fees, annual fees, etc.). You are responsible for providing your own billing information to the registrar, and the registrar will bill you directly. Cogent and the registrar are completely exclusive of one another.

Cogent Providing Primary or Secondary Name Service

Although Cogent does not register domain names for you, it does require that you copy domreg@cogentco.com on your domain name submissions to the registrars. This allows Cogent

administrators to verify the accuracy of the information submitted and to be prepared for the configuration required on the Cogent name servers to support your requirements.

Cogent Providing Master Name Service

If you would like Cogent to provide the Master name server for one or more of your domains, Cogent must be listed as the technical contact for the domain(s). When registering domains with Network Solutions, please enter the assigned NIC Handle, "DA23490-OR", in the technical contact information fields. When using a registry service that does not recognize that NIC Handle, the following details should be submitted for the technical contact (but not the billing contact and not the domain owner):

DNS Administration
Cogent Communications
1015 31st St, NW
Washington, DC 20007
USA

Email: dns@cogentco.com
Tel: 202-295-4200
Fax: 202-338-8798

In this situation, you will also need to provide to the registry the names and IP addresses of Cogent's primary and secondary name servers.

Primary Server Hostname	AUTH1.DNS.COGENTCO.COM
Primary Server Netaddress	66.28.0.14
Secondary Server Hostname	AUTH2.DNS.COGENTCO.COM
Secondary Server Netaddress	66.28.0.30

Cogent Providing Slave (Secondary) Name Service

Cogent can provide Slave name service if you would prefer to maintain your own Master name server for your domain and have Cogent pull the zone data from your server. It is not necessary to list Cogent as a contact with the registrar when Cogent is not running a Master server for the domain. However, Cogent will need all email sent from you to the registrar to be copied to dns@cogentco.com. You will need to provide Cogent with the IP address of your Master name server and the name of the domain for which Cogent will be providing Slave name service. The name server information you need to provide to the registrar will usually be the following:

Primary Server Hostname	Hostname of your name server
Primary Server Netaddress	IP address of your name server
Secondary Server Hostname	AUTH1.DNS.COGENTCO.COM
Secondary Server Netaddress	66.28.0.14

The following is optional:

Third Server Hostname	AUTH2.DNS.COGENTCO.COM
Third Server Netaddress	66.28.0.30

If you prefer not to list your Master server with the registrar, then you must put in the record for auth2.dns.cogentco.com. It is not optional in that case because at least two name servers must be listed with the registrar for any zone.

You will also need to make sure you have put the appropriate NS records in your zone data. The NS record for auth1.dns.cogentco.com is required. You also need an NS record for auth2.dns.cogentco.com if you have listed auth2 with the registrar as a name server for your zone. This is how the NS records in the zone file should appear:

```
@   IN   NS   auth1.dns.cogentco.com.
@   IN   NS   auth2.dns.cogentco.com.
```

If Cogent is providing Slave service, you must also configure your name server to allow zone transfers originating from the following three IP addresses: 66.28.0.14, 66.28.0.30 and 66.28.3.10.

DNS Changes or Additions

All request for DNS changes, additions, etc., should be documented on the DNS Questionnaire (http://www.cogentco.com/Guide/IPAlloc/DNS.txt) and sent to support@cogentco.com.

VII. Mail Exchanger Service Offering

Cogent Communication offers backup Mail Exchanger service. If your site loses connectivity, your mail can be sent to a Cogent Backup Mail Exchanger. Once your site regains connectivity, your mail is downloaded to your mail server.

You should check to see that these backup mail exchanger records are in place for your site. If you have nslookup, you can check for your MX records with the following commands:

```
nslookup
set q=mx
domain_name.com
```

In addition to your MX record, there should also be a record for a mail server that is not on your site's network, i.e., a backup mail exchanger.

If your site does not have backup mail exchangers listed, you may add our servers for your site at no extra charge.

If we are providing your site with backup mail exchanger, the machines used should be the following:

Pref.	Name
5000	mx.smtp.herndon.psi.net.
5000	mx.smtp.la.psi.net.

The backup mail exchanger will hold your mail for up to one week (7 days). The mail queue on these machines will periodically process your back-up mail and attempt delivery. Once a connection is made, the mail will be delivered. This process may vary in time based on the size of your mail backup and the duration of time required to connect to your server.

Requesting Mail Exchanger Service

Please complete question “6” on the IP Questionnaire if Backup SMTP Service is requested. If requested, please complete the SMTPQ. Links are provided below.

- IP Questionnaire - http://www.cogentco.com/Guide/IPAlloc/IPQ.txt
- SMTP Questionnaire - http://www.cogentco.com/Guide/IPAlloc/SMTPQ.txt

VIII. IP Allocation Policy

Overview

Cogent efficiently allocates IP addresses to customers based on ARIN guidelines (http://www.arin.net) and RFC 2050 (http://www.ietf.org/rfc/rfc2050.txt). In cooperation with its customers, Cogent will make the most efficient use of allocated network space so that it can continue to route traffic and obtain new network address space when it is requested. Cogent encourages and supports customers who require global address space for their networks, however, it will examine all requests for address space with care to validate the use of the IP numbers that are allocated. In certain limited situations, Cogent may request a customer to re-design its network before routing new address space to the customer, if the existing range of addresses is sufficient for customer requirements. Cogent reserves the right to deny new address space in the event a customer unreasonably refuses a valid network re-design request.

Cogent must answer to ARIN for their allocations and demonstrate efficient utilization. As a result, customers are required to provide the same information to Cogent. Customers prove efficient usage of IP addresses by filling out an IP Questionnaire and documenting their needs. This document shows, in detail, the plan for using IP addresses over the next 90 days.

Who is ARIN and what do they say about IP allocations on their website?

ARIN is the American Registry for Internet Numbers. They control allocations of blocks of IP addresses to ISPs in this region of the world. Every ISP has to prove to ARIN that they have efficiently utilized their existing IP addresses in order to get another block. Efficient utilization is shown by collecting information from each customer on how they plan to implement their network. This is where Cogent's IP Questionnaire (IPQ) comes into play.

ARIN's rules read, in part:
Allocations are based on need, not solely on a predicted customer base.

Allocations are based on an ISP's utilization history, projected three-month requirement, and other information ARIN deems necessary. Therefore, initial allocations may be relatively small. Likewise, justification for subsequent address blocks will be based on utilization verification supplied to ARIN in the form of reassignment information.

The most important factor in evaluating requests for additional address space is the current utilization of address space by the requesting ISP as well as its downstream customers. ISPs must have efficiently utilized all previous allocations, and at least 80% of their most recent allocation in order to receive additional space. This includes all space reassigned to their customers. Therefore, it is important that ISPs require their downstream customers to follow the efficient utilization practices described in this and other ARIN guidelines.

Please refer to their website for further information.

Cogent Customer Equipment Guidelines:

Retail/End-User
* Customers classed as "Retail" are End-Users. A typical example would be a law firm

with offices in a Cogent building.
* Lines sold as "Retail" are only to be used for internet access for company employees.
* Retail customers may use a Layer-2 Switch to connect to Cogent if they require a /25 (128 IPs) or less.
* If more than a /25 is required, a Router or Layer-3 Switch is required.
* ***Reselling IP services on a Retail line is grounds for Cancellation.***

Wholesale/ IP Reseller
* Customers classed as "Wholesale" or "Carrier" or "ISP" are those that Resell IP Services of any type on the line. Typical examples of this would be a colocation, streaming, or webhosting company.
* All Resellers are required to use a Router or Layer-3 Switch to connect to Cogent.

General Conditions for Allocations of All Sizes:

Customers must use at least 50% of their initial allocation immediately (defined as same-day, with a one week window for unexpected equipment issues or unusual circumstances). A utilization rate of less than 50% indicates the customers' *immediate* needs are for a smaller block. For example, if a /26 (62 useable IPs) is assigned, Cogent should be able to ping 31 of them one week after assigning them.

Customers must use 80% of the block within three months. If the 80% mark is not reached, Cogent may withdraw the block and reassign a more appropriate size.

Customers must use 80% of the last-assigned block and 100% of all previous blocks before Cogent will issue additional IPs. The existing blocks of IPs must respond to ping, and existing hosts must have forward and reverse DNS. Optimally, customers will receive a block adequate for their documented needs for the next 90 days, use it completely, and come back for more once a quarter.

Customer blocks are sub-delegated to customers via RWHOIS. Cogent's RWHOIS server is rwhois.cogentco.com, port 4321.

Detailed Documentation Requirements

For IP Requests of a /21 (2048 IPs) or larger, please contact your Service Delivery rep (for your initial allocation) or Customer Service (for additional IPs). Requests of this size are handled on a case-by case basis, and will require extensive documentation, including network engineering plans. In many cases, customers requiring larger blocks of IPs have already met the at-times seemingly convoluted ARIN requirements necessary to get their own block. We can discuss your specific circumstances and offer guidance in this situation. Obtaining your own block allows you to never worry about renumbering all of your machines again, and frees you from being directly dependant on any single ISP for IPs. Cogent requires all customers that require IP addresses to fill out an IP Questionnaire (IPQ). The IPQ can be accessed via: http://www.cogentco.com/Guide/IPAlloc/IPQ.txt.

The IPQ is text formatted so you can directly fill in the information and either email the attachment or directly past into email.

In addition, Cogent has provided an example of a filled out IP Questionnaire. The example can be accessed via: http://www.cogentco.com/Guide/IPAlloc/IPQ-example.txt

NAT, Firewalls, and Private IPs

If a proxy firewall or other means that prevents Internet traffic from bi-directionally connecting to internal LAN hosts will be used, the machines behind the "filter" are considered hosts that do not require globally routable IP addresses and do not need to be included in the map. A good example of this would be customer internal PCs and printers - these do not require and for security reasons should not have globally routed IP addresses. In this instance, the customer should use an RFC-specified Private Network (see RFC-1918 at http://www.ietf.org/rfc/rfc1918.txt) for internal networking. Cogent will assign an appropriately sized net block according to the customer's needs for publicly visible servers in the firewall DMZ (email, www, FTP, etc.).

Internal Network Needs

For IPs to be used for your internal (non-customer) network, Cogent requires customers to list [IPQ question 8] subnets and the numbers of servers/hosts in them for immediate, 3-month, and 6-month requirements. You should also include aggregate blocks that you will be using for customers, but don't detail individual customers or hosts here.

In most circumstances, Cogent will allocate IPs based on 3-month requirements. Cogent may also, at its sole discretion, use the 6-month projections to set aside the next contiguous block for the customer. Such reservation is not a guarantee that the customer will receive that specific block.

Downstream Customer IP Needs

For IPs to be used for your downstream customer networks, Cogent requires its customers to list [IPQ question 9] subnets and the associated downstream customer names. No specific details are required as to customer host counts in the IPQ; it is assumed that you have enacted similar verification processes on and have policies in place to ensure correct block selection for your downstream customers. If not, future allocations will be affected. Before issuing space, Cogent reserves the right to ask for documentation provided to justify assignment of a particular block to a particular customer.

Webhosting Services

If you will be doing IP-based webhosting, ARIN requires you provide Cogent with what they term your "technical justification" for doing so, as well as a list of domains and URLs [IPQ question 10]. Name-based webhosting is the preferred way (whenever possible) as it utilizes significantly fewer addresses, but for a variety of reasons it is not always possible. If you can't use it, please simply explain why. URLs provided as documentation must resolve with both forward and reverse DNS.

IX. Cogent Communications Customer BGP Peering Information

Customer Requirements

In order to have a BGP peer with Cogent, a customer must be multi-homed, either within Cogent's network or with another Internet provider's network. If the customer is multi-homed with another provider, the customer must also have a registered AS (Autonomous System) number. Cogent does not facilitate acquisition of a public AS number. If the customer is multi-homed only within Cogent's network, Cogent will assign a private AS number to the customer. Customers are responsible for configuring their own equipment, including the BGP peer. Cogent does not provide assistance in configuring customer routers for BGP. Cogent customers are expected to filter their announcements to Cogent to prevent abuse of the peer. For more information and definitions of abuse, see the Acceptable Use Policy at http://www.cogentco.com/policy.html.

What to Expect

- Cogent has an easy to use BGP Questionnaire to aide in the set-up of BGP. It can be accessed through http://www.cogentco.com/Guide/IPAlloc/BGP.txt. The BGP Questionnaire is text formatted so you can directly fill in the information and either email the attachment or directly paste into email.
- Cogent runs BGP4.
- Cogent's AS number is 174.
- Cogent password protects all BGP connections. The customer will provide a password that should be from 6 to 8 characters, containing at least one number.
- Cogent filters BGP announcements from the customer based on network address space. Blocks of specific routes must be aggregated to the shortest prefix and will not be accepted as smaller blocks. For example, if a customer is assigned a /19, Cogent will only accept the announcement of this block as a /19 and not as 2 /20s or 4 /21s, etc. Announcements are allowed on the following basis:

    1. Cogent assigns the IP block to the customer.
    2. ARIN assigns the IP block to the customer.
    3. When another provider assigns the IP block, Cogent will verify the announcements by one of the following:

        - the information in SWIP and RWHOIS databases.
        - the IP block already being announced globally from the customer AS number.
        - a LOA (Letter of Authorization) submitted to Cogent by the confirmed owner of the IP block.

- Cogent does not accept announcements that are smaller than a /24 to external peers.
- Cogent does not accept announcements with community strings that are not on the list of approved community strings.
- Cogent makes no guarantees, explicit or implied, about the routing policies of other providers and the routes that they accept into their routing tables.
- Cogent reserves the right to disable a BGP peer that is adversely affecting other Cogent customers or Cogent/global network stability and/or performance until the problem is remedied. A reasonable effort will be made to contact the customer prior to turning down the peer; however, the integrity of the Cogent Network remains the top priority.

Peer Configuration

Cogent will set up two BGP peers per each customer connection. Peer A is where the customer will send Cogent its routes and Peer B is where all the routes are sent to the customer. Two single IP addresses will be assigned for Loopback addresses on the customer router and the Cogent router. The routes for these will be announced to each other in Peer A and will be the neighbor IP addresses for Peer B.

Peer A

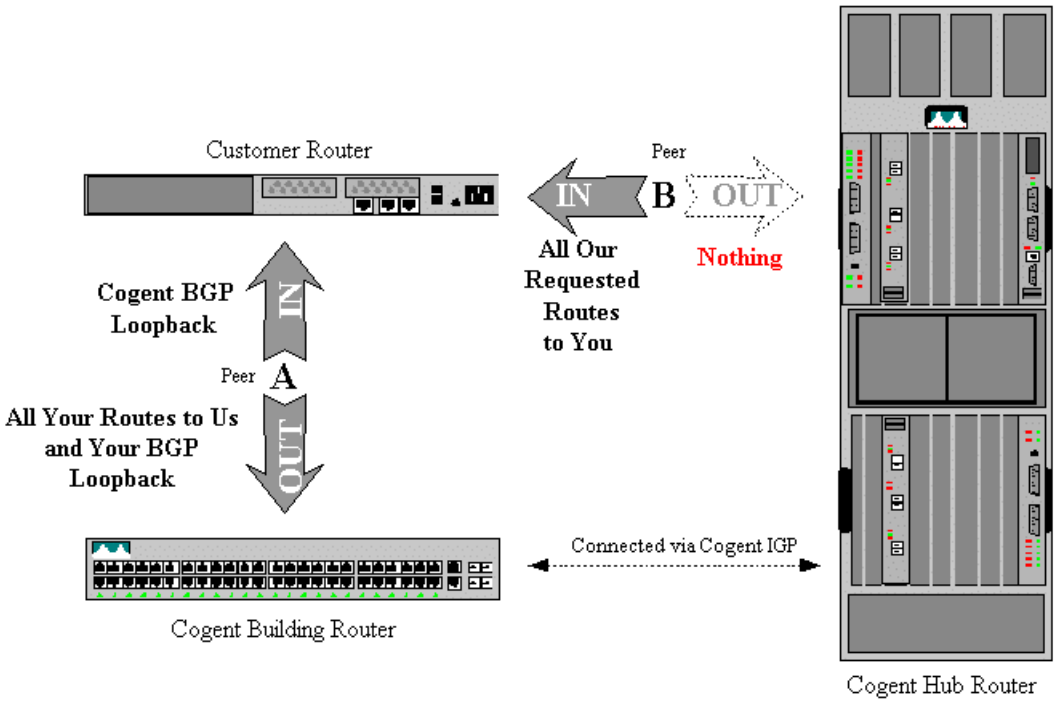
This is configured as a normal EBGP peer between the customer's directly connected interface and Cogent's connected interface.

- IN: This peer will receive a single /32 route that will allow Peer B to come up. This is the route for Cogent's Loopback address.
- OUT: This peer will send the customer's routes to Cogent, including the IP address that will be assigned by Cogent for Peer B.

Peer B

This peer is configured as an EBGP multihop peer, with a minimum TTL of 6. This peer will only come up once Peer A is up and is sending routes.

- IN: This peer will receive all the routes from Cogent according to the peer type the customer wants.
- OUT: This peer will not send routes to Cogent.



Types of Peers

Cogent offers five types of peers:

Transit Peer

Cogent will send the customer a complete BGP table with the internal Cogent routes aggregated as much as possible. This is recommended for customers seeking a complete routing table.

Non-Transit Peer

Cogent will only announce its aggregated internal routes, as well as the routes of other Cogent BGP customers. This is recommended for customers who want to use a single Cogent connection solely for access to the Cogent Network.

Back-Up Peer

Cogent will only announce the IP block of the Cogent backbone network. The customer is then expected to point their default network at that IP block. This is recommended for customers who have a low-powered router and are only multi-homed for redundancy, with one line being the primary line and the other only used as a backup.

Detailed Transit Peer

Cogent will send the customer a complete BGP table without aggregating the internal Cogent routes. This is useful for customers who are multi-homed within the Cogent Network.

Detailed Non-Transit Peer

Cogent will send its internal routes without aggregating them, as well as the routes of other Cogent BGP customers. This is recommended for customers who are multi-homed within the Cogent Network and who want to use their connection to only access the Cogent Network.

Services/Features

Local Preference

All customer routes announced to Cogent will have a local pref of 130.

The customer can control the local preference for their announcements by using a community string that is passed to Cogent in the BGP session. The following table lists the community strings and the corresponding local preference that will be set when they are used.

Community String	Local Pref	Effect
174:10	10	Set customer route local preference to 10 (below everything-least preferred)
174:70	70	Set customer route local preference to 70 (below peers)
174:120	120	Set customer route local preference to 120 (below customer default)
174:125	125	Set customer route local preference to 125 (below customer default)
174:135	135	Set customer route local preference to 135 (above customer default)
174:140	140	Set customer route local preference to 140 (above customer default)

AS Padding

Customers with public AS numbers may pad their AS path to control the desirability of their connections. Customers with an assigned private AS number from Cogent may not pad their AS path. Cogent will ignore any padding of private AS numbers from customers.

No-Export

Customers can control the "no-export" settings of their routes with the following community strings:

Community String	**Effect**
174:970	Do not send route to NA (North America) - not accepted in NA
174:971	Do not send route to NA peers.
174:975	Set local preference to 10 in NA.
174:980	Do not send route to EU (Europe) - not accepted in EU
174:981	Do not send route to EU peers.
174:985	Set local preference to 10 in EU.
174:990	Do not send route to BGP customers, or peers.
174:991	Do not send route to peers.

Peer Controls

Effective on ALL peer, non-granular.

Community String	Effect
174:3000	Do not announce.
174:3001	Prepend 174 1 time.
174:3002	Prepend 174 2 times.
174:3003	Prepend 174 3 times

Other Communities

Routes announced to customers by Cogent will have one of the following communities associated with them:

Community String	Description
174:21000	Route is learned from NA (North America) non-customer.
174:21001	Route is NA internal or customer route.
174:21100	Route is learned from EU (Europe) non-customer.
174:21101	Route is a EU internal or customer route.

X. Cogent Colocation Customer Access Procedure

Colocation customers are required to provide 24 hours notice when requesting access to their equipment. Access will be granted with less than 24 hours notice only in emergency situations and should be verified.

To request access with a minimum of 24 hours advance notice, the customer must email support@cogentco.com the request (including requested date/time of visit). The person making the request must be on the Customer Company Contact List. For emergencies, customers can call 1-877-7COGENT, but must also follow up with an email request. The person making the emergency request must also be on the Customer Company Contact List.

Customers will not be allowed access to a Hosting Center if they have an outstanding account balance.

These procedures apply only to Cogent owned colocation facilities. If you are purchasing colocation services from a party other than Cogent, you must contact that provider to determine its access procedure.

XI. Network Maintenance Policy

Cogent Communications will perform regularly scheduled maintenance on the Cogent Network during the hours of 0300 and 0700 local time, Monday through Friday. Cogent will attempt to notify customers of scheduled maintenance two business days in advance, via email. In most cases, maintenance performed will not take the full configuration window. Cogent will provide more detail regarding the anticipated duration of the maintenance in the email notification.

In the event of unscheduled or emergency maintenance, Cogent will attempt to notify the customer via email and/or via telephone as soon as it is aware of the immediate need for maintenance. Unscheduled or emergency maintenance is generally defined as maintenance necessary to avoid imminent network outages.

XII. Troubleshooting

Cogent Communications strives to provide you with the best service possible. In the event that you feel our level of service does not meet your expectations, please contact our Customer Service department at the numbers listed below:

Customer Service Hotline: 877-7-COGENT (toll free)
(877-726-4368)
518-266-3340 (local)
518-283-9101 (fax)
support@cogentco.com (maintenance and repair)
billing@cogentco.com (billing, customer care)

Cogent monitors the physical hardware on the network 24 x 7 x 365, and will make every effort to proactively notify you if your service goes down. However, please be aware that some outages may not generate alarms on our monitoring system.

In the event that you have lost service, please have the following information available when calling Technical Support:

For incidents in which you have lost connectivity to the Internet or external sites:

- Can you ping the gateway on your network to which the Cogent line is provisioned?
- If there is no response from your gateway, please ensure that your equipment is receiving power and that all cables are properly attached. If possible, power-cycle your equipment.
- If there is a response from your gateway, please specify whether or not you are able to ping sites on the Cogent Network such as your default gateway or 66.28.0.45 (res1.dns.cogentco.com).

For incidents in which you have lost connectivity to some external sites, or general connectivity is slow and unresponsive:

- Ping your Cogent default gateway, reporting the latency and packet loss experienced.
- Identify which external sites are either not reachable or exhibit high latency and packet loss. Provide Trace routes to Customer Support for these sites, via e-mail to support@cogentco.com or via fax to 518.283.9101
- Try to identify any sites that do not exhibit “slowness” or packet loss.

When contacting Technical Support, please be prepared to identify the following:

- Your order number
- Your company name
- Your domain name
- The physical location of the line on which you are reporting a problem.
- A detailed description of the problem.
- How long you have been experiencing the problem.

- Time constraints that may affect when a technician or vendor can be dispatched to your location.

For non-urgent problem reporting, please email support@cogentco.com.

Cogent reserves the right to charge a customer in the event a Cogent representative is dispatched to the customer site to resolve a trouble report and that trouble report is discovered to be produced by customer premise equipment.

XIII. Escalation Procedures

Cogent Escalation Procedures have been established for notifying upper management of customer service and operational system problems. This escalation procedure may also apply to installation of new customer services. Cogent customer, backbone and operational system problems are tracked in the Cogent trouble tracking system. If Cogent has determined that the problem is due to customer equipment, escalation procedures may be halted.

Please note that if Cogent has not been able to interface with the customer to eliminate customer initiated actions, Cogent Customer Support Staff may:

- continue internal escalation if initial troubleshooting indicates that the outage is associated with the Cogent Network. See **Appendix A** for Customer Service Internal Escalation List.
- halt escalation (until 7 am local time the next business day) if the troubleshooting indicates that the customer's equipment may be the root cause of the outage.

Appendix A: Customer Service Internal Escalation List

Level 1	**15 Min.**	**30 Min.**	**1 Hour**	**2 Hours**	**4 Hours**	**6 Hours**	**8 Hours**	**12 Hours**	**1 bus. Day**	**2 bus. Days**	**3 bus. Days**
DNS add/change Response to Customer Email Billing or Informational Request										Manager, Customer Support	Director, Customer Support
Level 2	**15 Min.**	**30 Min.**	**1 Hour**	**2 Hours**	**4 Hours**	**6 Hours**	**8 Hours**	**12 Hours**	**1 bus. Day**	**2 bus. Days**	**3 bus. Days**
Non-service affecting problem report on single customer line				Senior Technician on Duty	Senior Technician, Customer Support	Manager, Customer Support		Director, Customer Support	VP, Operations		
Level 3	**15 Min.**	**30 Min.**	**1 Hour**	**2 Hours**	**4 Hours**	**6 Hours**	**8 Hours**	**12 Hours**	**1 bus. Day**	**2 bus. Days**	**3 bus. Days**
Non-service affecting problem on multiple customer lines.			Senior Technician	Manager, Customer Support	Director, Customer Support	VP, Operations					
Level 4	**15 Min.**	**30 Min.**	**1 Hour**	**2 Hours**	**4 Hours**	**6 Hours**	**8 Hours**	**12 Hours**	**1 bus. Day**	**2 bus. Days**	**3 bus. Days**
Service affecting problem on single customer line.		Senior Technician	Manager, Customer Support	Director, Customer Support	VP, Operations						
Level 5	**15 Min.**	**30 Min.**	**1 Hour**	**2 Hours**	**4 Hours**	**6 Hours**	**8 Hours**	**12 Hours**	**1 bus. Day**	**2 bus. Days**	**3 bus. Days**
Service affecting multiple customer problem	Manager, Customer Support	Director, Customer Support	VP, Operations								

NOTE: Cogent telephone system operates off an Automated Call Distributor (ACD). Therefore, the escalation process is regulated through the 1- 877-7-COGENT number. Please use this number to both contact Cogent Customer Support and request escalation if you believe that proper support is not being provided.