

Date _____ Addendum Number 5

From: _____
Sprint

To: Judy L. Lilly, Director
Communications Network Services, 0506
Virginia Tech
Blacksburg, Virginia 24061

A proposal to amend contract number CC-0696-Sprint is requested. Attached is the proposed language for the modification.

<u>Type of Change/Service Requested</u>	<u>Purpose of Change</u>
Modify Original Contract	Extend access services and modify network management.

Sprint is pleased to submit this proposal to amend the contract referenced above at the prices and terms indicated in the attached document. Should the University wish to accept this proposal, please have your duly authorized representative sign in the space provided below and return this copy to the Sprint Representative at the address listed above. All other terms and conditions of the contract and preceding modifications shall remain in full force in effect except as modified herein.

Sprint
Date

To: Minnis E. Ridenour, Executive Vice President
Office of the Executive Vice President
Virginia Tech
Blacksburg, Virginia 24061

From: Judy Lilly, Director
Communications Network Services
Virginia Tech
Blacksburg, VA 24061

Attached are documents to amend the contract referenced above. This request has been reviewed and approved by the Office of the General Counsel. Please sign and return to me at the address above.

Office of the Executive Vice-President
Date

Virginia Tech Communications Network Services
Date

Addendum to the Broadband Network Services Agreement between Virginia Tech and Sprint

This Addendum is being entered into pursuant to Section 5.16, Negotiated Procurement - Multiple Contracts, of the Broadband Network Services Agreement between Virginia Tech and Sprint dated June 12, 1996. The items outlined in this Addendum reflect additions and changes to the existing services contained in the Broadband Network Services Agreement. In the event of a conflict, this addendum supercedes the original Agreement and all previous addenda.

A. Terms and Conditions

The following shall be added to the Terms and Conditions of the Broadband Network Services Agreement:

1. **Page 6, Clause 4.14, Taxes and Regulatory Fees:**

[Add the following as a subparagraph]

"PICC/USF/ADDL CHARGES

For interstate services only, Sprint may adjust its rates and charges or impose additional rates and charges on Customer in order to recover amounts it is required by regulatory or other governmental authorities to collect on behalf of or pay to others in support of statutory or regulatory programs directly related to services described in Attachment A. Examples of such programs include, but are not limited to, the Universal Service Fund, the Presubscribed Interexchange Carrier Charge, and compensation to payphone service providers for use of their payphones to access Sprint's service. **Such charges will not apply to the intrastate services described in Attachment A."**

2. **Page 15, Clause 5.17, Orders:**

[Change the third subparagraph to read as outlined below]

"For Orders installed prior to 10/1/99, any Ordering Party may cancel an Order after thirty-six (36) months of service with no cancellation fee. If an Ordering Party cancels an Order after twenty-four (24) months of service, but before the end of thirty-six (36) months of service, the Ordering Party shall pay a cancellation fee equivalent to the rate of three (3) months of the service then subscribed to. If an Ordering Party disconnects before twenty-four (24) months, Ordering Party will be charged access termination liabilities equivalent to charges for months remaining in the initial twenty-four (24) month period plus a fee equivalent to three (3) months of the service then subscribed to. Sprint may, at its discretion, waive any cancellation fees.

For Orders installed after 10/1/99, any Ordering Party may cancel an Order after twelve (12) months of service with no cancellation fee. However, if an Ordering Party disconnects before twelve (12) months, Ordering Party will be charged access termination liabilities equivalent to charges for months remaining in the initial twelve (12)

month period. For example, if an Ordering Party cancels after eight months' service, that Ordering Party will be charged a cancellation fee equal to four months at the rate of the service then subscribed to."

3. **Page 16, Clause 6.2, Acceptance Criteria:**

[Change FORE Systems ASX200BX ATM switch to FORE Systems ASX-1000 and UNI 3.0 to UNI 4.0]

4. **Page 16, Clause 6.2, Acceptance Criteria:**

[Change FORE Systems ASX200BX ATM switch to FORE Systems ASX-1000 and UNI 3.0 to UNI 4.0]

B. Appendix A, Description of Service for Virginia Tech

The following shall be added to Appendix A of the Broadband Network Services Agreement:

1. **Page 19, 8.1, Private Network Description:**

[Change FORE Systems ASX200BX ATM switch to FORE Systems ASX-1000]

2. **Page 19, 8.1, Private Network Description, subparagraph Private ATM Gateway to Sprint Public IP Network, 1st, 3rd and 8th bullet:**

[Add OC3 and POSIP Interface Card. Add "MBONE Services are provided on an experimental basis and are exempt from performance and reliability requirements for other services described in this Agreement."]

3. **Page 20, 8.1, Private Network Description, subparagraph Private ATM Gateway to Sprint's Public ATM Network:**

[Change DS3 Bandwidth to OC3 Bandwidth]

4. **Page 22, 8.1, Private Network Description, subparagraph IP Access, 3rd bullet:**

[Add the following clarification]

"SprintLink on Campus services will not be offered to new subscribers to that service."

5. **Page 24, 8.2, Network Capacity Management:**

[This section amendment will become effective upon written certification by Virginia Tech of implementation of a new Scaling Methodology to be mutually acceptable to the parties. At such time, replace section text, except the last paragraph, with the following:]

The services provided under this Agreement will be used to carry integrated voice, video, and data applications with high and predictable performance. Examples of the applications to be supported include but are not limited to distance learning, digital video transmission, data intranet, telephony, high end videoconferencing, high

performance Internet access, access to broadband research network resources via Abilene, the vBNS, and ESnet, and others--The Contractor is committed to scaling network resources, and supporting use of all ATM and IP standards-based network features to enable successful deployment of any congruent application or combination of congruent applications by Ordering Parties. All measures undertaken by Contractor will be subject to this overriding objective and will be changed as necessary to ensure continued performance. **Sprint will scale network resources based on mutually acceptable utilization calculations, subject to Paragraphs a) and b) below.**

a) Scaling Methodology

The Contractor will work with Virginia Tech and other involved service providers to develop and implement predictive analysis and engineering methods, which will be used to scale all network components including Contractor's electronic components (switches, routers, and other equipment), links between Contractor's network nodes, Access Carrier Extensions, SprintLink gateway services, and any subcontracted components. This methodology will be subject to review by Virginia Tech and Contractor on a quarterly basis to ensure continued performance.

b) ATM Virtual Circuit Configuration Guidelines

The intent is to effectively and efficiently support applications without wasting network resources. Therefore, the following guidelines will generally apply for ATM virtual circuit configuration:

- UBR class of service (COS) will be utilized to provision data services including intranets and access to the SprintLink gateway service. In general, internet data services using IP will be provisioned using UBR.
- VBR-rt and VBR-nrt class of service will be utilized to provision applications which require or substantially benefit from this COS. An example is videoconferencing.
- ABR will be utilized as possible to support applications which require or benefit from this COS.
- CBR class of service will be utilized only to support applications requiring it. (Examples include circuit emulation and H.320 video).

Choice of appropriate class of service to support applications will be based on mutual agreement between Contractor and Ordering Parties. Contractor will consider all specification requests related to virtual circuit and virtual path configuration and will respond within five working days to requests, which cannot be immediately implemented. If requests are denied, Contractor will provide detailed explanation of reasons for denial and will, if possible, suggest alternative specifications to meet application objectives. Contractor will attempt, in good faith, to cooperate with Ordering Parties to support any application.

These guidelines will be reviewed quarterly coincidental with review of the Scaling Methodology and will be modified, as necessary, to ensure highest possible performance and to accommodate new standards, features, or services.

[Revise the last paragraph to read as follows]

"For connections to LEC Hubs (Vision Alliance), Sprint will provide an appropriate ATM interface on a backbone switch and extend a connection to the designated Sprint POP. This interface and connection will match the scaling of the loop extensions between Sprint POPs and LEC facilities with the understanding that those extensions will be provided and sized based on mutually acceptable utilization calculations, which may be reviewed on a quarterly basis by Virginia Tech, Sprint and the Vision Alliance or Selected Access Vendor(s)."

6. **Page 25, 8.3, Network Management, 3rd paragraph :**

[Change FORE Systems ASX200BX ATM switch to FORE Systems ASX-1000]

[Add the following at the end of the section]

Effective upon execution of this Addendum, Contractor will assume responsibility for all order processing, network operations, network management, and customer support provided by Virginia Tech during Phase I related to delivery of services pursuant to this Agreement. Contractor will ensure delivery of equivalent or better service to all Ordering Parties as a result of this transition. A Transition Plan, mutually agreeable to Contractor and Virginia Tech, will be implemented and completed no later than four months after execution of this Addendum. Formulation of the Transition Plan and implementation will be the responsibility of the Contractor. Virginia Tech will review transition progress and will, before the end of the four-month transition period, provide certification of transition to Contractor or notice of failure to achieve certification. In the event Virginia Tech withholds certification, Virginia Tech will provide to Contractor written indication of the deficiencies. If Contractor fails to achieve transition certification within sixty days following Contractor's receipt of such written indication of deficiency, or within four months after execution of this Addendum, whichever is later, Virginia Tech may terminate this Agreement with no penalty to any Ordering Party or may continue, at its sole discretion, to provide order processing, network operations, network management, and/or customer support services at terms and conditions mutually agreeable to Contractor and Virginia Tech.

At any time during the term of the Agreement, should Contractor fail to deliver services as described above, Virginia Tech will provide written indication of such deficiency to Contractor. If Contractor fails to cure such deficiency within sixty days following Contractor's receipt of such written notice, Virginia Tech may terminate this Agreement with no penalty to any Ordering Party.

Virginia Tech shall be permitted read access to all Contractor network components used to deliver the services described herein including ATM switches and IP routers. Contractor shall implement any components required to enable such read access.

7. **[Add the following new requirement to the Agreement]**

8.4 Sprint Coordinated Access Provider and Customer Selected Access Vendor-Provided Services

Sprint Coordinated Access Provider and Customer Selected Access Vendor Services are described in Appendix D, which is hereby incorporated by reference

[Add the following as Appendix D]

Appendix D: Sprint Coordinated Access Provider and Customer Selected Access Vendor Services

Definition of terms

- Sprint Coordinated Access Provider – Contractor or subcontractor delivering access services to Ordering Parties under the complete terms of this Agreement. SCAPs may receive orders, manage access services, and bill Ordering Parties directly on behalf of Contractor.
- Customer Selected Access Vendor - Other access providers delivering services to connect Ordering Parties to Contractor-provided network services. Contractor is not responsible for services delivered by Customer Selected Access Vendors. Contractor will not prohibit access from Customer Selected Access Vendors.

- Sprint Provided Access Vendor - Other access providers delivering services to connect Ordering Parties to Contractor-provided network services on an individual case basis. Sprint Provided Access Vendor services will be available only in areas not served by SCAPs. Prices mutually agreeable to Contractor, Ordering Party, and Virginia Tech to be quoted to Ordering Party by Contractor, at Ordering Party's request, prior to order processing, and subsequently, will be charged to the Ordering Party. Contractor will not be held responsible for the timeliness of services or the availability of the local loop facilities provided by the local exchange carrier, but will take all steps necessary to ensure service is provided within the timeframe specified. Sprint Provided Access Vendor services will be subject to the same terms and conditions applicable to SCAP services unless otherwise noted herein.

The terms and conditions described in this section, 8.4, apply only to Sprint Coordinated Access Provider services and do not replace the terms and conditions for other Contractor services as contained elsewhere in this Agreement.

SCAP Service Description

Contractor will coordinate Sprint Coordinated Access Providers (SCAPs) to provide access services. In addition Contractor will support access services through alternative, customer-selected access providers, (Selected Access Vendors, SAVs). The terms contained in this Section 8.4 apply only to services delivered via Sprint Coordinated Access Providers. All services provided by Contractor pursuant to this Agreement will be supported equally, regardless of access provider utilized. Contractor will work cooperatively with access providers, to provide Frame Relay and ATM Network Services, in accordance with the terms and conditions of the Broadband Network Services Agreement and as further described herein.

Subject to the availability of facilities, SCAP will provide network based ATM Cell Relay and Frame Relay Services from the Contractor's or SCAP Central Office facilities, as described in this Amendment; provided Orders for services contain specifications compliant with the then current ATM or Frame Relay Industry Standards. For the term of this Agreement, Contractor will continue to deploy standards-based service to ensure services are not impaired in any way through obsolescence. Contractor will make a good faith effort to deploy any service requested by Virginia Tech in accordance with the ATM Forum and other official industry standards.

The services will be capable of providing voice, data and video connectivity at speeds of sub-rate DS1s, DS-1, DS-3 and OC-3c originating from SCAP's central office-based ATM/Frame Relay switch(es). However, sub-rate DS-1s are only for Frame Relay data customers. These services will be delivered via fiber or copper facilities and be terminated at the Ordering Party's recognized demarcation point. Contractor or SCAP will provide a quotation to Ordering Party for extensions beyond the recognized demarcation point. Subject to applicable procurement policies and regulations, Contractor may offer additional access services and/or installation features and services at additional cost.

At a minimum, the following interfaces and features will be made available by the Selected Access Vendor:

- ATM UNI v4.0
- ATM UNI v3.0
- ATMF UNI v3.1
- ATMF NNI (PNNI-0/IISP)
- ATMF NNI (PNNI-1)*
- PVC's (Point to point)
- PVC's (Point to Multipoint)
- SVC's (Point to point)
- SVC's (Point to Multipoint)
- PVPs
- CBR

- VBR
- UBR
- ABR

Carrier Access for Sprint Coordinated Access Carrier Providers

Sprint Coordinated Access Providers will be connected to Contractor’s network via Access Carrier Extensions. These Access Carrier Extensions will be sized and configured consistent with the methodology prescribed in Section 8.2, Network Capacity Management as amended herein. The purpose of the access carrier extensions is to aggregate bandwidth of the DS1, DS3 and OC3c local access loops within the SCAP’s Switch. Contractor will continue to provide Access Carrier Extensions to Customer Selected Access Vendors, including the Vision Alliance, consistent with the terms of section 8.2 as it existed prior to October 1, 1999.

For Carrier Extensions to Sprint Coordinated Access Providers, Contractor will coordinate management of the Carrier Extensions with SCAP for purposes of performance monitoring and fault resolution. Upon receipt of an Order, which necessitates an upgrade of a SCAP Carrier Extension, Contractor will notify the SCAP of the required upgrade within two working days and ensure upgrades are complete in time to accommodate said Order. All fees for this access and management are included in the prices set forth in Appendix B, Pricing.

Trouble Reporting

Contractor will coordinate with SCAPs to provide a Single Point of Contact (SPOC) hotline number for reporting network problems, and will provide coverage twenty four (24) hours a day, seven (7) days a week, three hundred sixty five (365) days per year. This SPOC will serve as a single point of contact for trouble reporting and service restoration coordination and will provide a four-hour mean time to repair objective on all provided access services. The SPOC will accept calls from all Ordering Parties. In the event of a "Major Outage", which is defined as an outage of more than two links on any single switching system or NNI connection, Contractor and/or SCAP will respond within a two-hour mean time to repair objective on all services.

Contractor will coordinate SCAPs to provide fault tracking by assigning a tracking number for each circuit and/or service-affecting problem reported. The Ordering Party reporting the trouble will use this tracking number to facilitate service restoration information and status reporting. Contractor will coordinate status reporting to affected Ordering Party, problem resolution, and final reporting. Mutually agreed upon detailed escalation procedures will be developed. Contractor will coordinate SCAPs to provide network monitoring three hundred sixty five (365) days per year, twenty four (24) hours a day. Upon detection of potential service affecting conditions Contractor will coordinate notification to affected parties and monitor resolution.

Contractor will provide to Virginia Tech a monthly report detailing network problems and resolution sufficient to enable Virginia Tech to verify compliance.

Ordering for Sprint Coordinated Access Provider Services

Contractor will coordinate a single point of contact for the ordering of the services provided under this Agreement. Standard service intervals listed below will apply where facilities are available. Where facilities are not available, individual installation intervals may apply. Locations already served by facilities owned by Contractor or SCAP will not be assessed special construction charges. For locations that are not directly served by fiber, and where a special construction charge is applicable, the special construction charge will be quoted to the Ordering Party prior to order processing and subsequently charged to the customer to install the service. Within ten days after receiving such a quote, Ordering Party may elect to cancel order without penalty.

<u>Service</u>	<u>Installation Interval</u>
OC-3c UNI/NNI	90 calendar days

DS-3 UNI/NNI	90 calendar days
DS-1 UNI/NNI	90 calendar days
DS-1 Circuit Emulation	90 calendar days
Frame to ATM UNI	60 calendar days
Path or circuit configuration changes	5 business days

Should the SCAP's Frame or ATM service previously exist at a location and an upgrade in access line speed or the addition of a new facility be requested, reduced intervals may be negotiated by Contractor.

Subject to availability of facilities, Ordering Parties may upgrade services within Contractor's/SCAP's service area, provided that service orders are initiated from the same Ordering Party for replacement services concurrent with service orders de-installing the original service. No installation charges will apply unless new access facilities are required.

8. FRANI and FRASI in Amendment #2

[Page 4, "Ordering Party FRANI and FRASI InterLATA Network Charges" section. Delete paragraphs 2 and 3.]

[Page 5-6, Amendment 2 Appendix B, delete all Price Examples]

9. [Add the following section as Appendix E]

Appendix E: Gateway to Virginia Tech Multimedia Network Access Point

Virginia Tech will establish within Virginia Multimedia Network Access Points (MNAP). The MNAPs will be utilized to provide an interconnect point for access to other networks, content services, and other resources to be determined by Virginia Tech. For example, Internet2 member institutions may gain access to the Abilene network and other research networks via the MNAPs. Contractor will establish an ATM NNI connection, or other connection type mutually agreeable to Virginia Tech and Contractor, to MNAPs to enable Ordering Parties to gain access to MNAP services. Initially, Contractor will provide two MNAP connections. One initial location will be at Virginia Tech's Internet2 Studio at 11 South 12th Street, Richmond, Virginia. The other will be in the Washington D.C. metropolitan area. These two initial MNAP connections will each be provisioned as OC3 ATM connections. Contractor will not charge for elements provided by Contractor for these two initial MNAP connections. Contractor will work with Virginia Tech to implement a local access mechanism for MNAP connections mutually agreeable to Virginia Tech and Contractor. MNAP connections will not be subject to scaling requirements described in Section 8.2 but Contractor will work with Virginia Tech to scale MNAP connections to specifications mutually agreeable to Contractor and Virginia Tech. Contractor agrees to implement and support ATM call routing such that calls may be established between Ordering Party facilities and end points reachable through the MNAP. Contractor may establish connection to multiple additional such MNAPs upon agreement between Contractor and Customer.

C. Appendix B, Pricing

1. Amendment #2

[Page 5, Amendment 2 Appendix B, add the following Port Speed and corresponding costs to the monthly price table]

“56K FRANI or FRASI Port \$34”

2. [Add the following section to Appendix B]

Pricing for Sprint Coordinated Access Provider Services

The following access services are available at the following per circuit rates for all sites in the SCAP’s serving territory. All locations in SCAP’s serving territory will be implemented utilizing SCAP’s central office based ATM switching system and Carrier Access Extension (NNI) as described above in Network Services and Carrier Access, and at the prices described below.

<u>Service</u>	<u>Monthly Rate</u>	<u>Installation</u>
<u>ATM</u>		
OC-12c UNI/NNI	TBD	TBD
OC-3c UNI/NNI	\$7,200	\$1,500
DS-3 UNI/NNI	\$3,400	\$750
DS-1 Circuit Emulation/NNI	\$350	\$350
DS-1 UNI/NNI	\$350	\$350
XDSL Access	TBD	TBD

<u>Service</u>	<u>Monthly Rate</u>	<u>Installation</u>
<u>Frame Relay</u>		
DS-1	\$380	\$1000
56k	\$150	\$ 800
DS-1 Frame w/internetworking	\$528	\$1000
56k Frame w/internetworking	\$195	\$ 800
Additional PVCs *	\$1.25 per PVC	
Group Addressing *	\$50.00	

<u>Committed Information Rate (per PVC) *</u>		
56K port speed		
-either 8, 16, or 28k	\$5.00	N/A
DS1 port speed		
-56k	\$2.00	N/A
-128K	\$4.00	N/A
-192K	\$7.00	N/A
-256K	\$9.00	N/A
-384K	\$12.00	N/A
-512K	\$25.00	N/A
-768K	\$38.00	N/A

