1. **Overview**

1.1. The University of Massachusetts Lowell seeks proposal for Services related to Distributed Antenna System (DAS). It is the University’s intent to select a vendor who will design, build, market, maintain, and upgrade as needed a Neutral-Host Distributed Antenna System at the University of Massachusetts Lowell.

1.2. The University of Massachusetts Lowell is located in the historic industrial city of Lowell, 25 miles northwest of Boston, with the campus spanning more than 125 acres along the Merrimack River. More than 12,000 resident and commuter students of all backgrounds pursue bachelors, masters, and doctoral degrees as well as professional certificates in the arts, humanities and sciences; education; engineering; health and environment; and management. Internationally recognized for its excellence in science and engineering, UMass Lowell is a leader in nanotechnology and nonmanufacturing, bio manufacturing, bioinformatics and advanced materials. The University is a nationally ranked research university that receives a significant percent of funding from federal agencies and private industry.

1.3. More information on the Lowell campus can be found at [www.uml.edu](http://www.uml.edu).

1.4. **Bid Schedule**
   1.4.1. Bids Available March 12th
   1.4.2. Bid Walk-Though March 20th at 10:00 AM EST
          600 Suffolk Street
          Wannalancit Business Center, Rm 415
          Lowell, MA 01854
   1.4.3. Questions due by 4:00 PM EST, March 22nd
   1.4.4. Responses expected by end of business, March 29th
   1.4.5. Bids due April 4th, 11 AM EST

2. **Scope of Service**

2.1. **Project Overview**
   2.1.1. The scope of work will require the DAS provider to:
   2.1.1.1. Design, build, market, maintain, and upgrade as needed a Neutral Host Distributed Antenna System for the entire UML Campus (see http://maps.uml.edu/campus)
   2.1.1.2. Provide full voice and data cellular coverage independent of carrier(s) and their technologies on the UML Campus
2.1.1.3. Market the system and negotiate carrier participation, including if applicable, a portion of construction, installation, maintenance fees, usage fees and facility rentals with carriers.

2.1.1.4. All costs associated with design, planning, construction, maintenance, tariffs, taxes and fees associated with this project will be borne by the selected contractor.

2.1.1.5. Enhanced 4G capable cell phone service and coverage to patrons;

2.1.1.6. A minimum “4-bar”, 4G capable coverage to all Campus Facilities

2.1.1.7. Sufficient capacity on the DAS to service all vendors who have access and use of the system

3. **Technical Requirements**

3.1. The system shall provide total coverage to all UML buildings (inside and outside) located on the North, South and East campus, built out in phases (See Attachment F)

3.2. The system shall be carrier format neutral and support every cellular carrier, independent of wireless frequencies and format used

3.3. The system and all its subsystems shall be designed to operate twenty-four (24) hours a day 365 days a year

3.4. Must be compatible with current (EVDO/EVDV and UMTS) and new technologies, (for example 4G) as well as current re-bandings efforts

3.5. Must be able to expand the system to accommodate additional interested carriers at later intervals

3.6. Design must use modular architecture

3.7. Prior to any installation, all antenna mounting locations are to be approved by UML.

3.8. **Signal Coverage and Reliability**

3.8.1. **Active Signal Handling**: The DAS will have active (powered) elements that filter and amplify signals to consistently deliver wireless services at the appropriate power levels. The solution will support all requested services to insure that each service (or carrier) has the ability to adjust and control power levels without disturbing other services.

3.8.2. **RF Signal Coverage**: At a minimum, for cellular and PCS coverage, the system must deliver signal strength of -85 dBm to -89 dBm (3 Bars) to 95% of campus building spaces.

3.8.3. The DAS may use Right of Way and Conduit System. The DAS will be responsible for all necessary fiber. Any Conduit or rights of way that are more than 50% full will not be available for DAS use.

3.8.4. **Additional Power**: Should additional Power will need to be installed to the local panel DAS will be responsible costs. All upgrades to power will be the responsibility of the DAS. Any additional power will need to be coordinated though a university approved electrician
4. **Construction Requirements**

4.1. **Constructions Standards and Building Information**
   4.1.1. All UML Design & Construction Standards shall be followed. An extensive approval process is required prior to any installations. The Proposer should be aware of this process and take into account these requirements when preparing the project schedule. For reference, the following standards and forms are listed that the Proposer should be familiar with throughout this project:
   4.1.2. Any Alterations to UML buildings or facilities must be coordinated by with UML Facilities Department
   4.1.3. UML Telecom Standards: (Attachment E)

4.2. **Codes**
   4.2.1. Mandatory code compliance:
      4.2.1.2. National Electrical Code (National Bureau of Fire Underwriters)
      4.2.1.3. Applicable FCC and other applicable federal, state and local regulations and ordinances
   4.2.2. The installation, operation or maintenance of the system shall not endanger or interfere with the safety of persons or property on the University campus

4.3. **Conduit**
   4.3.1. When the design calls for use of UML’s conduit structure, UML will make all duct assignments. Vendor must use UML assigned ducts only.

4.4. **Demarcation**
   4.4.1. Cellular Carriers will not be permitted to have a local exchange company extend T-1 or circuits of any kind beyond UML’s primary demarcation point.
   4.4.2. Local exchange companies wishing to place underground or above ground facilities on campus will be approved by and coordinated with UML. Design must minimize the amount of equipment that will be placed on facilities and be publicly visible.

4.5. **Fixtures**
   4.5.1. Fixtures will not be placed in locations that will interfere with gas, electric, irrigation fixtures, water hydrant or other fixtures the UML deems as having priority.
   4.5.2. Aesthetics – use of stealth antennas and antennas shall blend into building architecture
   4.5.3. Indoor antennas shall be low profile, flush-mount types suitable for suspended ceilings or walls and shall be of a multi-band configuration. It is acceptable to surface mount antennas in an open ceiling environment and to install surface-mount antennas to walls, near ceiling height.
   4.5.4. Prior to any installation, indoor and outdoor, all antenna mounting locations are to be approved by UML.

4.6. **Access**
   4.6.1. Vendor will be dependent on UML for facility access. UML maintains 24/7 on-call personnel though University Police
4.6.2. Vendors shall observe all University parking regulations and are liable for any parking violations. Parking at building entrances, lawn or common areas is prohibited. Vendors are responsible to coordinate access with their Facilities manager for any special vehicles making deliveries or performing the work. All Vendors will be required to pay for long-term parking (exceeding 10 business days per semester). Please review the tiered structure and monthly option since we realize your campus presence may be transitive in nature.

4.6.2.1. The monthly rate will be a fee structure based on their average hours on campus per week using the following matrix:

4.6.2.1.1. 1-10 hours per week: $3 per month ($36 per year)
4.6.2.1.2. 11-20 hours per week: $6 per month ($72 per year)
4.6.2.1.3. 21-30 hours per week: $9 per month ($108 per year)
4.6.2.1.4. 31-40 hours per week: $12 per month ($144 per year)

4.6.2.2. All Vendor personnel will be permitted to park in any staff lot with the exception of the Costello/Pinanski Lot (now a faculty-only lot) and the Southwick Lot. A full list of parking locations can be found at www.uml.edu/ParkingLocations.

4.6.2.3. For more information regarding UML parking, please visit our website at http://www.uml.edu/ucaps/Vendor_and_Visitor_Permits.html. If you have any questions regarding parking, please contact the UCAPS Office at UCAPS@uml.edu.

4.6.3. Vendor shall make reasonable efforts to obtain background information on any applicant or employee assigned to work at UMass Lowell under this contract. Such background information should include, but not limited to, reference checks and verification of prior employment, and any information relevant to the applicant or employee’s reliability and trustworthiness. In addition, Vendor shall perform a criminal record check for any employees to determine whether such employee should be assigned to work at UMass Lowell under this contract.

4.7. Renovations and Additional Buildings

4.7.1. When the University undertakes campus improvements which affect the DAS, the University may direct the service provider to remove or relocate its wires, conduits, cables and other property located on the campus property.

4.7.2. The DAS will be responsible for coverage of all newly constructed facilities and acquired facilities

4.7.3. The University will make all efforts to include DAS vendor during design and construction

5. Implementation and Project Plan

5.1. Vendor will coordinate all activity and hardware installation

5.2. Implementation & Project plans must include:

5.3. Time line to include:

5.3.1. Planning, installation, testing and other major milestones associated with the project

5.3.2. Milestones at which UML must be engaged to provide support, the type of support required, and the length of time estimated will be required of UML resources.
5.4. Project plan to include:

5.4.1. Design drawings
   5.4.1.1. Additional surveys to develop the design must be obtained at Vendors expense
   5.4.1.2. Vendor will provide a map of a rough layout of the network design across campus – identify outside and inside antennas
   5.4.1.3. Should such final design, in UML’s judgment, deviate from the bid in a manner that constitutes any hardship for UML, UML reserves the right to terminate without cost or cause any contract resulting from this RFP.
   5.4.1.3.1. Discussion on features of the equipment and installation, include a discussion on planned redundancy and other network technology/topologies, low profile antennas, uninterruptible power supplies (UPS), etc.
   5.4.1.3.2. Discussion on safety and governing agency compliance issue
   5.4.1.3.3. Identification and specifications of all equipment and cable to be installed at each location
   5.4.1.3.4. Project management plan – project meetings, update reports, etc.
   5.4.1.3.5. Escalation matrix

5.4.2. Installation acceptance
   5.4.2.1. Final ‘as-built’ drawings are to be submitted to UML within one (1) week of completion and acceptance of each facility – AutoCAD format

5.4.3. Project Team
   5.4.3.1. Contact information for Project Manager and Account Manager to include: Office Phone, Cell Phone, Fax Number, email address, street address for hard copy correspondence. (UML will provide same.)
   5.4.3.2. Project Manager will:
      5.4.3.2.1. Serve as a single point of contact for communication with the University
      5.4.3.2.2. Act as liaison between UML and Vendor employees and sub-contractors
      5.4.3.2.3. Must be located within 100 miles of Lowell, Massachusetts and capable of attending on-site meetings, both scheduled and unanticipated
      5.4.3.2.4. Must be on-site to oversee sub-contractor work and keep project on schedule
      5.4.3.2.5. Update the project status and report same to UML Project Coordinator

5.4.4. Account Manager will:
   5.4.4.1. Manage the overall business relationship

5.4.5. Communication
   5.4.5.1. Vendor will promptly notify UML of all delays known or anticipated in the construction, re-build, or extension of the system. UML may extend the construction timetable in the event the Vendor, acting in good faith, experiences delays by reason of circumstances beyond its control.

6. Acceptance and Testing

6.1. The DAS Provider and UML are responsible for the mutually agreed development of acceptance test specifications for the installed systems. The exact scope, methodologies, procedures, and
acceptance criteria for executing the acceptance tests require UML approval. Said test plans must incorporate, at minimum, the following:

6.2. All Testing and Acceptance shall be conducted by the Anchor Carrier. University acceptance is contingent of Anchor Acceptance.

6.3. The UML group will inspect the system to verify that subsystems, units and controls are properly labeled and interconnecting wires and terminals are identified.

6.4. Any observed deficiencies indicated by tests or by UML inspection will be rectified and completely retested within 10 (ten) days. Work and materials required to correct deficiencies will be made at no expense to UML.

7. **Maintenance**

7.1. The DAS Provider shall bear all costs for maintenance, repair and ongoing operating costs.

7.2. **Trouble Reporting/Emergency Service:**
   7.2.1. Vendor shall provide a single telephone number that will be staffed continuously (24 hours per day, 7 days per week, 365 days per year)
   7.2.2. Vendor will provide 2 hours response time for major outages
   7.2.3. Vendor will provide 24-hour maintenance and repair services
   7.2.4. Vendor will provide an Emergency Service execution plan to be distributed to all project participants and others as identified as appropriate by the University

7.3. **Renovations:** The Vendor shall responsible at their expense to make safe or remove equipment when the University deems necessary.
   7.3.1. All work requested under 7.3 must be completed within five (5) business days.

7.4. The Vendor will resolve to UML satisfaction, inter-system interference within 24-hours at the RF level, the digital signaling levels, or in mechanical or electrical connections. The Vendor will provide a statement of interference resolution for RF interference, electrical / mechanical interference, digital and optical interference.

8. **Business Model**

8.1. The entire cost of this project will be borne by the Vendor; to include, (but not limited to) design, planning, implementation, management, installation, utility placements and supporting infrastructure (electric meter loops, electrical conduit, building & fire code fees, any UML Facilities Operations and Services Division impact fees, roof penetrations and patching, etc.), monitoring & maintenance, continual upgrading, and marketing.

8.2. Vendor will be awarded the sole right to market the campus cell service to cellular carriers. In addition, the Vendor will have the sole right to market the campus to cellular carriers for placement of cell sites that are to be integrated into the selected Proposer’s system.
8.3. The University will refer any inquiries received from cellular carriers for the placement of cell sites or fiber-based microcellular (distributed antenna) systems on the campus to the selected Proposer and will use best efforts to encourage carriers to utilize the DAS solution.

8.4. The Vendor will be responsible for negotiating and drafting agreements for the use by a carrier of any UML building or other elevated structure on the campus on the University’s behalf, whereas the Vendor, being the benefactor shall receive the rent directly from the carriers. The Vendor is to compensate UML via a revenue sharing plan.

8.5. This is a revenue sharing business model, in which the University will receive a fixed amount from the Vendor for sole access to the UML campuses. As new carriers are added, the University will receive a percent of the increased revenue.

8.6. Maximum contract rate will be five years with one (1) potential five (5) year option.

8.7. Final Contracts may only be issued after acceptance of awarded vendors business plan and verification carrier contract.

9. Proposal Requirements

9.1. Interested Vendors shall be required to provide the following:


9.2.1. Qualifications Statements shall contain the information set forth below:

9.2.1.1. Office. Address, staffing level, and hours of operation of the Massachusetts office that will administer this contract.

9.2.1.2. Business History. Provide a description of business organization, date of organization, and number of years in the business of providing services within the scope of this engagement. If the DAS services are provided by a division or other unit within the organization (whether or not a distinct legal entity), provide the history of this unit.

9.3. Comparable Client/Service Experience: The successful Vendor must demonstrate significant and profitable business experience in the following areas:

9.3.1. A commercial carrier and DAS systems operator (including installation, operations and maintenance) with at least three (2) continuous years of business experience preceding the proposal submission date, comparable to the systems proposed by this RFP, in one or more large scale facilities including; public assembly, convention or exhibition center(s), arenas, stadiums, malls, hotels, etc.

9.4. References. List, for each comparable client identified pursuant to Section 9.3 above, the name, title, address, and telephone number of the individual employed by such client having the principal responsibility for said engagement.

9.5. Presentations. The University reserves the right to invite potential vendors to campus for presentations to the selection committee.
9.6. Proposals shall consist of Schedules 9.5.1 through 9.5.6, attached hereto and completed in every detail. Additional pages may be used where necessary.

9.6.1. Work Plan (9.7 including the following components:
9.6.2. Management Team (9.8)
9.6.3. Financial Stability (9.9)
9.6.4. Competing Commitments (9.10)
9.6.5. References (9.11)
9.6.6. The signed Proposal Offer- Attachment A
9.6.7. Affidavit of State Tax Compliance –Attachment B
9.6.8. Certification of Non-Collusion– Attachment C.
9.6.9. Comments on Distributed Antenna System Contract – Attachment D.

9.7.1. Vendors shall submit a detailed and explicit work plan with narrative which clearly set forth in sufficient detail how the Vendor will provide DAS systems scope of services, including, but not limited to:
9.7.1.1. Project Schedule
9.7.1.2. Project Budget
9.7.1.3. Project Components
9.7.1.4. Power requirements for the head-end facility
9.7.1.5. Environmental requirements for the head-end facility
9.7.1.6. Square footage requirements for the head-end facility
9.7.1.7. Space requirements for equipment installed outside of the head-end facility
9.7.1.8. Power requirements for equipment installed outside of the head-end facility
9.7.1.9. Microsoft Project plan for the installation of the proposed system
9.7.1.10. Proposed carriers
9.7.1.11. Equipment and manufacturer list for proposed system
9.7.1.12. Proposed cable, wire and fiber-optic specifications
9.7.1.13. utility (electricity) and air conditioner
9.7.1.14. access 24/7 for repair and maintenance

9.7.2. Operational Plan Narrative
9.7.3. Maintenance plan, including any and all costs associated with the operations of the DAS systems.

9.8.1. The Vendor’s proposed Manager must have not less than five (5) years of experience in managing and performing engagements of similar complexity, size and scope. Other key personnel shall each have not less than three (3) years of experience in providing DAS services of similar complexity, size and scope in their respective fields. The University will rate highly Vendor’s whose key personnel have extensive experience in successfully completing services related most closely similar in complexity, size, duration, and scope of this engagement.

9.8.2. Management qualifications, including in public assembly buildings, i.e., public assembly, convention or exhibition centers, arenas, stadiums, malls, facilities or similar facilities and the backgrounds of senior management staff proposed for the contract. Include the offeror’s organizational chart, and total number of employees and staffing plan
categorized by title and responsibilities and information on each individual to be assigned to this account. The statement should include:

9.8.2.1. full name and address
9.8.2.2. title
9.8.2.3. years of experience
9.8.2.4. areas of responsibility as it relates to the RFP
9.8.2.5. division the person currently works for, and experience directly related to each segment of the scope of services contained herein.

9.8.3. Subcontractors.
9.8.3.1. The Vendor shall submit a qualifications and experience statement for all subcontractors, if any, that would be used for any portion of the scope of services. The following should be submitted with the following information:

9.8.3.1.1. name and address of subcontractor, vendor, or consultant
9.8.3.1.2. resume or biography of the owner
9.8.3.1.3. resume or biography of key employees who would work on the contract
9.8.3.1.4. list of major clients
9.8.3.1.5. areas of expertise with specific portion of the work to be performed on the contract

9.8.3.2. Vendor’s experience in using services of referenced subcontractor(s), sub-licensee(s), vendor(s) or consultant(s).

9.8.4. Vendor’s must submit with their Proposals the required contractor’s qualification statement including a written statement attesting that the firm or firms will provide all required services, and fees to the University if selected for this Contract.

9.9. FINANCIAL STATEMENTS

9.9.1. For a Public Corporation, UML reserves the right to request additional financial information from the bidders to determine the Bidder's financial stability which may include, but is not limited to:

9.9.1.1. Balance Sheet
9.9.1.2. Income Statement
9.9.1.3. Notes to the Financial Statements
9.9.1.4. Statement of Changes in Financial Position
9.9.1.5. Auditor's Report
9.9.1.6. The 10-Ks for the last year and the 10-Qs for the last year
9.9.1.7. Quarterly reports and annual reports to stockholders for the last two years.

9.9.1.8. A copy of a letter from the Bidder's attorneys or in-house legal counsel to the Bidder's auditor concerning the status of all legal actions including but not limited to contract disputes, lawsuits, pending litigation, government arbitrations, and other adjudications for the most recent fiscal year. If there are no lawsuits or pending litigation, a letter to that effect.

9.9.1.9. A description of past, present, or potential future litigation, if any, related to the Bidder's past performance under contract on projects similar to the one called out in this RFP.

9.9.1.10. A complete Dun and Bradstreet credit report dated no less than thirty (30) days prior to the Proposal Due Date.
9.9.1.11. In lieu of any of the above showings, the Bidder may submit a written justification for consideration.

9.9.1.2. For a Privately Held Corporation
9.9.1.2.1. The following information may be requested by the UML to determine the Bidder’s financial stability (the information provided under this section will meet or exceed the required information requested under (9.8.1):

9.9.1.2.2. If the corporation is not publicly traded, a financial statement, covering the last three years, must be completed and supplied by an independent Certified Public Accountant (firm or individual).

9.9.1.2.3. A copy of a letter from the Bidder’s attorneys or in-house legal counsel to the Bidder’s auditor concerning the status of all legal actions including but not limited to contract disputes, lawsuits, pending litigation, government arbitrations, and other adjudications for the most recent fiscal year. If there are no lawsuits or pending litigation, a letter to that effect.

9.9.1.2.4. A description of past, present, or potential future litigation, if any, related to the Bidder’s past performance under contract on projects similar to the one called out in this RFP.

9.9.1.2.5. In lieu of any of the above showings, the Bidder may submit a written justification for consideration (D)

9.10. Competing Commitments. If University determines that one or more other ongoing or pending engagement(s) of the Vendor’s or a sub-consultant(s) may pose a conflict of interest or a possible conflict of interest, in the opinion of the Authority, the University reserves the right to rate such Applicant unfavorably as to this criterion unless the affected Vendor or sub-consultant(s) agrees to terminate such other engagement(s) or to take other actions acceptable to the University to avoid or eliminate such conflict or possible conflict of interest.

9.11. References. The University may conduct some or all references provided by the Vendors and may contact other representatives of clients of the Vendors, or other clients, whether or not the Vendor has identified them as references. The Vendor shall receive from clients within the scope of paragraph (a), above, uniformly positive recommendations regarding the Vendors' (i) compliance with the terms of the Vendor’s contractual obligations; (ii) responsiveness to specific service needs and quality-of-service issues communicated by the client, including satisfaction of equipment and products, ability to meet supply and demand and (iii) demonstrated capacity to recruit and retain personnel meeting the client’s service needs.

9.12. University reserves the right to invite selective companies for presentations prior to the award.

10. Award Criteria

10.1. Cost, while not the sole determinant factor, will be considered.

10.2. Quality of the proposal: evidence of understanding the work to be done, a clear, responsive plan for carrying it out.

10.3. Experience of staff, scope of previous projects of the staff and the firm.
10.4. The schedule and time frame proposed.
10.5. Financial Stability.
10.6. References

11. RFP Response Required Requirements

11.1. Submit proposals in three (3) copies (original and 2 copies) with one (1) complete
electronic copy in PDF format on CD or flash media.

11.2. Page size should be 8 1/2" x 11". Type size for text should be at least 10-points. Data
submitted should be bound in a single document. Please do not submit in 3 ring binders. Bulk
must be kept to an absolute minimum. Any material submitted for consideration must be
incorporated in each response copy. A single set of material will not be reviewed.

11.3. Unnecessarily elaborate responses beyond that sufficient to present a complete and
effective response is not desired. Unless specifically requested in the RFP, elaborate art work,
corporate brochures, lengthy narratives, expensive paper, specialized binding, and other
extraneous presentation materials are neither necessary nor desired. Submissions will become
part of the official records for this RFP and cannot be returned.

Please provide a concise proposal in electronic form, no later than 11:00 a.m. on April 4th, 2012,
to:

Michael Durkin
Associate Director of Purchasing
UMass Lowell
Wannalancit Business Center, Rm 415
600 Suffolk Street
Lowell, MA 01854
purchasing@uml.edu

MARK SUBMITTAL: “Distributed Antenna System RFP CL12-MD-0038”

Proposal selection is expected by, the end of April 2012; the selected firm will be asked
to begin work immediately on execution of a contract.

12. Questions/RFI’s

12.1. All Questions should be submitted electronically via email no later than 4:00 PM, EST,
March 22nd, 2012; and directed ONLY to:

Michael Durkin
Associate Director of Purchasing
purchasing@uml.edu
12.2. The anticipated response to questions is expected to be on **End of Business March 29th, 2012**

13. **Terms and Conditions**

13.1. **Disclaimer**

13.1.1. UMass Lowell reserves the right to reject any and all bids and to adapt the project's specifications based on information received in the course of this negotiation. Information in the proposal deemed proprietary by the vendor should be specifically identified, and will be kept in confidence. UMass Lowell will not be responsible for any costs incurred by a vendor in the preparation and/or production of a proposal.

13.1.2. The University may cancel this proposal at any time under any condition.

14. **Selection and Notice**

14.1. Awards shall be let to the proposer who, the University, in its opinion, deems responsive and responsible taking into consideration the reliability of the proposer, the qualities of service and products to be supplied, and their conformity with the requirements and the purposes of which required. While considered, pricing will not be the main factor in selection.

14.2. The University reserves the right to reject any and all proposals, to omit an item or items, or to accept any proposal deemed to be in the best interest of the University.

14.3. The University will notify the selected vendor of its decision and will be prepared to enter into a standard University contract and/or issue a Purchase order immediately upon selection and notification that the offer to engage is accepted by the vendor. The University may request clarification of any proposal by phone, e-mail, in writing or during an in-person presentation.

15. **Contract for Service**

15.1. The selected firm will be expected to enter into a standard University Contract for Services (Attachment D). Any exceptions to the standard form contract should be noted in the proposal. Such an exception may be grounds for rejection of the proposal, at the option of the University.

16. **Entire Agreement**

16.1. This proposal represents the entire agreement. Any terms on a contractor’s invoice are not a part of and are not merged into the agreement, unless mutually agreed upon by UMass Lowell and the contractor in writing. Any exceptions to the terms and conditions contained within this proposal must be so noted in writing within the contractor’s response. Any exceptions taken to the terms and conditions within this proposal may result in the classification of contractor’s response as non-responsive and no consideration for award will be given.
17. Payment Terms

17.1. All services should be billed in arrears. The University Payment Terms shall be net 30 from the date UMass Lowell receives the invoice, with late penalty interest assessable at rates established by the Commonwealth after 45 days in accordance with Mass.Gen.Laws ch.29, § 29C and with Commonwealth Regulation 815 C.M.R. 4.00. Please state your billing schedule tied to deliverables.

18. Freedom of Information

18.1. All proposals received are subject to Massachusetts General Laws Chapter 4, Section 7, Section 26 and Chapter 66, Section 10 regarding public access to such documents. Statements or endorsements inconsistent with those statues will be disregarded.

19. Certification of Non-Collusion

19.1. Pursuant to Massachusetts General Law, Chapter 7, Section 22 (20), I certify under penalties of perjury that this proposal is in all respects bona fide, fair, and made without collusion or fraud with any person. As used in this certification the word “person” means any natural person, joint venture, partnership, corporation or other business or legal entity.

20. Compliance with Laws and Regulations

20.1. In accordance with the terms and conditions of this RFP, the Contractor represents that it is qualified to perform the services set forth herein and has obtained all requisite licenses and permits to perform the services. In addition, the Contractor agrees that the services provided hereunder shall conform to the professional standards of care and practice customarily expected of firms engaged in performing comparable work; that the personnel furnishing said services and products shall be qualified and competent to perform adequately the services assigned to them; and that the recommendations, guidance, and performance of such personnel shall reflect such standards of professional knowledge and judgment.

21. Equal Opportunity/Affirmative Action

21.1. The University of Massachusetts Lowell is an Equal Opportunity/Affirmative Action, Title IX, H/V, ADA 1990 Employer and Executive Order 11246, Title 41, Part 60 of the CFR Sections 741.4, 250.4, 1.40, and 1.4 are hereby incorporated.

22. Proposal Conditions

22.1. Proposal must be signed by an official authorized to bind the vendor to its provisions.

22.2. This RFP document must be returned and signed as required in section 3.14 Proposer Representation.

22.3. Proposals must remain valid for at least 90 calendar days from the deadline for proposal submission.
22.4. Late proposals will not be considered. Proposals must be in the Purchasing Department before the date and time specified. Postmarks are not considered in determining late proposals. However, should a late proposal be the only response and if the proposal is also postmarked prior to the date and time of proposal opening, Purchasing may choose to make award to the proposer if it is determined that acceptance of the late proposal is in the best interest of the University of Massachusetts Lowell. When no proposals are received, in urgent circumstances the Purchasing Department may make an award based upon informed competition and without advertising.

22.5. Any proposals may be withdrawn or modified prior to the date and time stated in the proposal for the opening of proposals. Such withdrawal or modification may be either in writing and signed by an authorized representative of the proposer, or made in person at the Purchasing Department provided in the latter case that the proposer or his authorized representative shows adequate identification. FAX withdrawals, but not modifications, will also be accepted, provided written confirmation by the proposer is mailed and postmarked on or before the date and time set for proposal opening.

23. Proposer Representations

24. Each proposer by making its proposal represents that:

25. The proposal document and requirements have been read and understood by the proposer.

26. The proposal is based upon the items described in the RFP documents and requirements without exceptions.

27. The proposal has been arrived at independently and is submitted without collusion.

28. The contents of the proposal have not been disclosed by the proposer nor to the best of its knowledge and belief, by any of its employees or agents, to any person not an employee or agent of the proposer, or its surety on any bond furnished herewith, and will not be disclosed to any such person prior to the opening of proposals.

29. No attempt has been made or will be made to induce any other person or firm not to submit a proposal.

30. Required Proposal Signature Forms

30.1. The following forms must be reviewed and submitted with your proposal with the exception of item 4, University Contract for Services Agreement, which must be signed after award.

30.2. Attachment A: Proposal Offer Signature (Signature Required).

30.3. Attachment B: Certification of State Tax Compliance (Signature Required).

30.4. Attachment C: Anti-Collusion Form (Signature Required).
30.5. Attachment D: University Contract for Services Agreement (Attachment D: Must be signed after Proposal Award to complete the agreement with UMass Lowell).
Proposers are required to sign this form and submit it with their bid proposal.

To the University of Massachusetts Lowell, the undersigned proposes to provide services for the University of Massachusetts Lowell in accordance with the terms specified below and the terms of this request: CL12-MD-0038

The undersigned also hereby declares that it is the only person or persons interested in this proposal, that the proposal is made without any connection with other persons making any bid for the same work; that no person or persons directly or indirectly interested in this proposal, or in any contract which may be made under it, is expecting profits to arise therefrom; and without directly or indirectly influencing or attempting to influence any other person bidding for the same work; and that this proposal is made with distinct reference and relation to the specifications prepared for this case and herein mentioned. The undersigned declares that, in regard to the conditions affecting the work to be done, this proposal is based solely on their own investigations and research and not in reliance upon any representations of any employee, officer, or agent of the Commonwealth of Massachusetts.

The proposed contract compensation/fees are: ________________________________

Company/Firm Name of Bidder: _______________________________________

Name of Signatory (Person signing below): ________________________________

Contact Name: _______________________________________________________

Contact Telephone Number: ___________________________________________

Contact Business Address: _____________________________________________

Contact City and State: _______________________________________________

Contact Email Address: _______________________________________________

Authorized Signature: _________________________________________________

Printed Name and Title: _______________________________________________

Date of Offer: _______________________________________________________

Duration of Offer (minimum 90 Days) _________________________________
Attachment B

Required Affidavit of State Tax Compliance

CL12-MD-0038

Pursuant to Massachusetts General Laws, Chapter 62C Section 49A, Clause (B), added by Section 36 of Chapter 233 of 1983:

(Name of Person Representing Company/Firm): _______________________________, for

(Name of Company/Firm): _______________________________, whose principal place of business is located at:

Company Address: ______________________________________________________

Do hereby certify under the pains and penalties of perjury that the above mentioned named contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes.

Authorized Signature: ____________________________________________________

Printed Name: ____________________________________________________________

Title: ________________________________________________________________

Date: ________________________________________________________________
Attachment C

Certification of Non-Collusion

CL12-MD-0038

Bidders are required to sign below and submit this form with their bid.

A person submitting a bid or a proposal for the procurement or disposal of supplies or services to any governmental body shall certify in writing, on the bid or proposal, as follows:

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word ""person"" shall mean any natural person, business, partnership, corporation, union, committee, Club, or other organization, entity, or group of individuals.

(Signature of individual submitting bid or proposal)  Date

(Name of business) ____________________________________________________________
Attachment D

Contract for Services

CL12-MD-0038
UNIVERSITY OF MASSACHUSETTS
CONTRACT FOR SERVICES
TERMS AND CONDITIONS

(P.O. No.) ___________________
(Bid No.) ___________________

This agreement is made, entered into, and effective on ________________ by and between the University of Massachusetts, _________________________ (Campus), (hereinafter called “University”), an agency of the Commonwealth of Massachusetts and ____________________________________________________________________________________________________________, (Contractor’s legal name and address) (hereinafter called the “Contractor” and collectively the “Parties”).

This agreement (the “Contract”) is comprised of the following documents, listed in the order of precedence: (1) this Contract for Services Terms and Conditions; (2) any Contract Amendments, as identified in Section 2, below; and (3) any attached Scope of Services as identified in Section 1, below, including any addenda thereto. The Contract for Services Terms and Conditions and any agreed upon changes thereto included in any Contract Amendments shall take precedence over any additional or conflicting terms and conditions as may be included in any other document attached hereto.

1. Scope of Services. The Contractor agrees to perform the following services:

_______________________________________________________________________________________________________

or if applicable, those services described in the Attachment[s] attached hereto. Any Attachment attached hereto is made a part of this Contract and must be specifically labeled (e.g. “Attachment A, Scope of Services, consisting of ‘n’ pages”). Only the Scope of Services specifically referenced in this Contract and signed by the Parties’ authorized representatives shall apply.

2. Contract Amendments. The following amendments to the Contract have been executed by duly authorized representatives of the Parties and are attached hereto and incorporated herein:

_________________________________________________________________________________________________. All amendments attached hereto must be specifically labeled (e.g. “Attachment B, Amendment No. 1, consisting of ‘n’ pages”).

3. Dates of Performance:

From: ______________________ To: ______________________.

(Start Date) (Completion Date)

4. Responsible University Official: The University Official exercising managerial and budgetary control for this Contract shall be: ________________________________

__________________________________________________________________________________________________________

(Name and Title)

5. Payment:

A. The University shall compensate the Contractor for the services rendered at the rate of $___________________ per _____________ (e.g., hour, week, semester, project, etc.).

B. In no event shall the Contractor be reimbursed for time other than that actually spent providing the described service(s).

C. Payment will be made upon submittal and approval of the Contractor’s Invoice(s) that is (are) received Monthly ____ , Quarterly ____ , Other ____ (specify) _________________.

D. Reimbursement for Travel and Other Contractor Expenses:

___All travel and meals are part of this Contract. No reimbursement will be made.

___Contractor will be reimbursed for pre-approved travel in an amount not to exceed $ ________________________ .

Copies of receipts must be submitted. Any expense claimed by the Contractor for which there is no supporting documentation shall be disallowed.

___Contractor will be reimbursed for OTHER expenses in an amount not to exceed $ ________________________ .

OTHER Expenses shall be limited to: ________________________ .

Copies of receipts must be submitted. Any expense claimed by the Contractor for which there is no supporting documentation shall be disallowed.
E. The total of all payments made against this Contract shall not exceed $______________________________.

F. The University’s payment terms are net thirty (30) days from the date of receipt of Contractor’s invoice, with late penalty interest assessable at rates established by the Commonwealth after 45 days in accordance with Mass. Gen. Laws ch 29 § 29C and with Commonwealth regulation 815 C.M.R. 4.00.

6. Certification. Contractor certifies under the pains and penalties of perjury that pursuant to Mass. Gen. Laws ch.62C, §49A, that the Contractor has filed all state tax returns, paid all taxes and complied with all applicable laws relating to taxes; and that pursuant to Mass. Gen. Laws ch.151A, §19A(b), has complied with all laws of the Commonwealth relating to contributions and payment in lieu of contributions to the Employment Security System; and, if applicable, with all laws of the Commonwealth relating to Worker's Compensation, Mass. Gen. Laws ch.152 and payment of wages, Mass. Gen. Laws ch. 149, § 148. Pursuant to federal law, Contractor shall verify the immigration status of all workers assigned to the contract without engaging in unlawful discrimination; and Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker.

7. Conflict of Interest. Contractor acknowledges that it may be subject to the Massachusetts Conflict of Interest statute, Mass. Gen. Laws ch. 268A, and to that extent, Contractor agrees to comply with all requirements of the statute in the performance of this Contract.

8. Compliance With Laws. Contractor agrees to comply with all applicable local, state, and federal laws, regulations and ordinances in the performance of its obligations under this Contract.

9. Independent Contractor Status. The Contractor is an independent contractor and not an employee or agent of the University. No act or direction of the University shall be deemed to create an employer/employee or joint employer relationship. The University shall not be obligated under any contract, subcontract, or other commitment made by the Contractor.

10. Contractor’s Qualifications and Performance. In accordance with the terms and conditions of this Contract, the Contractor represents that it is qualified to perform the services set forth herein and has obtained all requisite licenses and permits to perform the services. In addition, the Contractor agrees that the services provided hereunder shall conform to the professional standards of care and practice customarily expected of firms engaged in performing comparable work; that the personnel furnishing said services shall be qualified and competent to perform adequately the services assigned to them; and that the recommendations, guidance, and performance of such personnel shall reflect such standards of professional knowledge and judgment.

11. Termination:

A. Without Cause. This Contract may be terminated without cause by either party by giving written notice to the other at least thirty (30) calendar days prior to the effective date of termination stated in the notice.

B. With Cause. If Contractor breaches any material term or condition stated herein or fails to perform or fulfill any material obligation required by this Contract, the University may terminate this Contract by giving written notice to the Contractor stating the circumstances of the breach at least seven (7) calendar days before the effective date of termination stated in the notice. Notwithstanding the foregoing, the notice of termination provided by the University may state a period during which the alleged breach may be cured by the Contractor, which cure shall be subject to approval by the University. In the event of a breach by Contractor, Contractor may be subject to any and all applicable contract rights and remedies available to the University. Applicable statutory or regulatory penalties may also be imposed.

12. Obligations in Event of Termination:

A. Upon termination of this Contract, all finished or unfinished documents, data, studies, and reports prepared by the Contractor pursuant to this Contract, shall become the property of the University.

B. Upon termination of this Contract without cause, the University shall promptly pay the Contractor for all services performed to the effective date of termination, subject to offset of sums due the Contractor against sums owed by the Contractor to the University, and provided Contractor is not in default of this Contract and Contractor submits to the University a properly completed invoice, with supporting documentation covering such services, no later than thirty (30) calendar days after the effective date of termination.

13. Recordkeeping, Audit, and Inspection of Records. The Contractor shall maintain books, records and other compilations of data pertaining to the requirements of the Contract to the extent and in such detail as shall properly substantiate claims for payment under the Contract. All such records shall be kept for a period of six (6) years or for such longer period as is specified
Severability. If any provision of this Contract is declared or found to be illegal, unenforceable, or void, then both Parties shall be relieved of all obligations under that provision. The remainder of the Contract shall be enforced to the fullest extent permitted by law.

Choice of Law. This Contract is entered into in the Commonwealth of Massachusetts, and the laws of the Commonwealth, without giving effect to its conflicts of law principles, govern all matters arising out of or relating to this Contract and all of the transactions it contemplates, including, without limitation, its validity, interpretation, construction, performance and enforcement.

Forum Selection. The Parties agree to bring any action arising out of or relating to this Contract or the relationship between the Parties in the state courts of the Commonwealth of Massachusetts which shall have exclusive jurisdiction thereof. The Contractor expressly consents to the jurisdiction of the state courts of the Commonwealth of Massachusetts in any action brought by the Commonwealth or the University arising out of or relating to this Contract or the relationship between the Parties, waiving any claim or defense that such forum is not convenient or proper. This paragraph shall not be construed to limit any other legal rights of the Parties.

Force Majeure. Neither party shall be liable to the other or be deemed to be in breach of this Contract for any failure or delay in rendering performance arising out of causes beyond its reasonable control and without its fault or negligence. Such causes may include, but are not limited to, acts of nature or of a public enemy, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, or unusually severe weather. Dates or times of performance shall be extended to the extent of delays excused by this section, provided that the party whose performance is affected notifies the other promptly of the existence and nature of such delay.
23. **Indemnification of University.** The Contractor shall defend, indemnify, and hold harmless the Commonwealth, the University, its Trustees, Officers, servants, and employees from and against any and all claims, liability, losses, third party claims, damages, costs, or expenses (including attorneys’ and experts’ fees) arising out of or resulting from the performance of the services performed by the Contractor, its agents, servants, employees, or subcontractors under this Contract, provided that any such claims, liability, losses, third party claims, damages, costs, or expenses are attributable to bodily injury, personal injury, pecuniary injury, damage to real or tangible personal property, resulting therefrom and caused in whole or in part by any intentional or negligent acts or omissions of the Contractor, its employees, servants, agents, or subcontractors. The foregoing express obligation of indemnification shall not be construed to negate or abridge any other obligation of indemnification running to the Commonwealth and/or the University that would otherwise exist. The University shall give the Contractor prompt and timely notice of any claims, threatened or made, or any lawsuit instituted against it which could result in a claim for indemnification hereunder. The extent of this Contract of indemnification shall not be limited by any obligation or any term or condition of any insurance policy. The obligations set forth above shall survive the expiration or termination of this Contract.

24. **Risk of Loss.** The Contractor shall bear the risk of loss of any Contractor materials used for a Contract and for all deliverables and work in process.

25. **Tax Exempt Status.** The University is exempt from federal excise, state, and local taxes; therefore, sales to the University are exempt from Massachusetts sales and use taxes. If the University should become subject to any such taxes during the term of this Contract, the University shall reimburse the Contractor for any cost or expense incurred. Any other taxes imposed on the Contractor on account of this Contract shall be borne solely by the Contractor.

26. **Waivers.** All conditions, covenants, duties and obligations contained in this Contract can be waived only by written agreement. Forbearance or indulgence in any form or manner by a party shall not be construed as a waiver, nor in any way limit the legal or equitable remedies available to that party.

27. **Amendments.** This Contract may be amended only by written agreement of the Parties, executed by the Parties’ authorized representatives and in compliance with all other regulations and requirements of law.

28. **Entire Agreement.** The Parties understand and agree that this Contract and its attachments or amendments (if any) constitute the entire understanding between the Parties and supersede all other verbal and written agreements and negotiations by the Parties relating to the services under this Contract.

29. **Notice.** Unless otherwise specified, any notice hereunder shall be in writing addressed to the persons and addresses indicated below (Name, postal address, phone, email address):

   **To the University:**

   **To the Contractor:**
Employees of the University shall not be held personally or contractually liable by or to the Contractor under any term or provision of this Contract or because of any breach thereof. This Contract is not binding until signed by an authorized University official.

IN WITNESS WHEREOF, the Parties have caused this Contract to be executed by their respective duly authorized officers as of the date first above written.

UNIVERSITY OF MASSACHUSETTS
__________________________________
(Signature)
Name: ________________________________
Title: ________________________________
(Authorized University Official)

CONTRACTOR
__________________________________
(Signature)
Name: ________________________________
Title: ________________________________

Signature: ________________________________
Name: ________________________________
Title: ________________________________
Attachment E

UML Telecom Standards
**TABLE OF CONTENTS**

NETWORK AND VOICE INFRASTRUCTURE PLANNING .................................................. 1
VERSION CONTROL ............................................................................................................. 1
PRE-BID REQUIREMENTS .................................................................................................... 2
MAIN TERMINAL ROOM SPECIFICATIONS (MDF) .......................................................... 2
RISER AND DISTRIBUTION CABLELING, CONDUIT AND CABLE TRAY ..................... 3
FLOOR TERMINAL SPECIFICATIONS (IDF) .................................................................... 5
WORKSTATION CONDUITS, WIREMOLD AND OUTLETS ............................................. 6
WIRELESS SPECIFICATIONS ............................................................................................... 7
ONE CARD SPECIFICATIONS (LAUNDRY / VENDING MACHINES) ............................. 8
VOICE SPECIFICATIONS AND DETERMINATION (VOIP / TDM) ............................... 8
SWITCH VENDOR ................................................................................................................. 9
CERTIFICATION REQUIREMENTS ..................................................................................... 10
DOCUMENTATION REQUIREMENTS .................................................................................. 10

APPENDIX
APPENDIX A – NETWORK SERVICES APPROVED PARTS LIST .................................
APPENDIX B – NETWORKING FACEPLATE DIAGRAM/SYMBOLS ..............................
APPENDIX C – MARGINAL WAY SPECIFIC SPECIFICATIONS .................................
Network and Voice Infrastructure Planning:
The following specification may be used by campus planners, architects and consultants when preparing design proposals and cost estimates for infrastructure in new and renovated buildings. The campus Facilities Department bears the primary responsibility for campus construction and renovation projects.

These specifications are intended to give general assistance to those planners, contractors, architects and consultants who are responding to requests for proposals and for bids issued by the University through the Facilities department.

What this document does NOT cover:
This document does not include any specifications for security devices (IP camera’s, emergency phones, access control devices), cable TV or audio / video needs. Those requirements are determined by University Police, Access Services, Comcast, and Instructional Services departments. Contacts will be provided upon request.

Questions about this document:
Any technical questions or clarification should be directed to Information Technology; Network Engineering Department or specifically Stephen Drescher (Stephen_Dresher@uml.edu). Any general questions pertaining to this document should be directed to Information Technology; Network Project Management Department or specifically Marcie Byrd (Marcie_Byrd@uml.edu).

There will be a main terminal room (MDF) in each building that all floor terminals (IDFs) will connect to. There may need to be multiple floor terminals (IDFs) per floor due to the length of cable runs. No cable runs are to exceed 295 feet from IDF to station location.

Version Control
The history of changes made to this document is listed below:

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<td>• Expanded VoIP / TDM sections</td>
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Pre-Bid Requirements
Prior to the bid going out the Network Project Management team needs the following to be completed:

**Meetings:** The University Network Services department requires at a minimum, one meeting with the project managers during the design cycle to review plans and another meeting once the final specifications are ready to be submitted for bids.

**Bid Package to include:** The final design specifications must include the University Approved Room numbers and the University Approved wireless access point locations. The approved room numbers are provided by the facilities department. The approved wireless access point locations are determined by submitting the design specification in pdf format to the Information Technology – Network Engineering team. This team needs at a minimum, two weeks to review the plan and provide the physical termination locations for the access points. Finally, the latest version of this document needs to be requested and followed prior to the bid being released to ensure that the latest requirements are met.

**Master Schedule to include:** A key milestone for the IT department is the IT ready date. The IT Ready Date, defined below, is the date when IT can start installing equipment into the renovated space and needs to be at least 5 business days before services to the end users are required.

IT Ready Date:
Main Terminal Room Specifications (MDF)

The MDF will be the central point of distribution for voice and data services to multiple IDF’s and also connect into the university core location for each campus. There are to be two distinct entrance routes from each building to the campus backbone. The core locations are located in Fox Hall, Dugan and Cumnock.

- Construction of this MDF needs to be a minimum of 10’ x 10’. Door must swing out and the opening must be a minimum of 36” to get equipment racks in and out of the area.
- At least two 4’ x 8’ raised ¾” fire-rated plywood or plywood which is painted with at least two coats of fire resistant white paint shall be in each closet and the location will be determined by Network Services staff member.
- A standard University Network Services master key is needed to secure these closets and Card access is required.
- Floors in telecommunications closets shall be static resistant tiles. *Carpeted floors are unacceptable.*
- All penetrations into the MDF are to be fire stopped and meet local building and fire codes.
- Electrical in each MDF is to include:
  - Four 120V 20AMP circuits with duplex receptacles
  - One 250V 30AMP twist lock receptacle – on backup generator
  - Location of these outlets will be determined by UML Network Services Department.
- If there is a generator for the building, then a dedicated circuit is to be provided to the MDF and each IDF.
- Cabling needs to be dressed in the MDF via ladder racks or basket trays.
- The MDF is to be cooled. Exhaust fans as the only cooling method are not acceptable.
- Fire suppressant system is required.
- Grounding: All metal components (racks, ladder tray, etc) are to be properly grounded and bolted to the floor per local code and industry standards.
- Work lights shall be provided with adequate lighting and be independently switched.
- There will be at least one 4-post equipment rack.
- All racks are to have doors on the horizontal and vertical wire management*
- Any cabling terminated in the MDF must follow the IDF specification (see Floor Terminal Specifications (IDF) below)

Riser and Distribution Cabling, Conduit and Cable Tray

* See Appendix A for Network Services Approved Parts List
The main terminal room (MDF) is attached to each floor terminal room (IDF) by a minimum of two but up to four cable systems.

Data Network – Copper twisted pair cables, Category 6

Data Network – Fiber multi-mode and single mode cable

Telephone Network – TDM: Copper House Pairs; VoIP: Both Data Network Fiber and Copper House Pairs

Cable TV (CATV) – Not addressed in this document

The Data Network copper twisted pair cable, Category 6, provides inter-terminal allocation of data services supporting both individual station, wireless access point and other such attachments. Cable is to be category 6 or higher*, plenum rated if required by local code or local fire standards. Spools are to be 1000 feet per spool, all left over cabling is to be turned over to UML Network Services at completion of project. All contractors doing copper cabling must have proof of Ortronics certified class completion and must be in good standing for the current year. No cable runs are to exceed 295 feet from IDF to station location.

- All cables are to be terminated according to EIA/TIA 568-A Cat 6 standards.
- All cabling to follow industry standards and meet local codes (i.e. No cable ties to electrical or water pipes, no cabling exposed in the hallway)
- All cabling run within the hallway above suspended ceiling needs to be run in parallel and properly supported by J hooks.
- All cabling run below a ceiling needs to be concealed inside wiremold*.
- For new constructions, cabling for speaker wires and fire alarms need to be properly support and separated from other cabling. For renovated buildings, new secondary raceways will be required for speaker wires and fire alarms.
- Hook & Loop fasteners are required to be used in the closets and hallways. Tie wraps are not acceptable. Hook & Loop fasteners should be of sufficient length to wrap around cable bundle twice to accommodate future expansion.

The Data Network fiber cable risers consist of a composite of both multi-mode and single mode fiber cables terminated to EIA/TIA standards using rack-mounted nineteen inch (19.00”) patch panels. The number of fiber pairs from the MDF to each IDF will be a minimum of 48 single mode and 12 multimode strands. The number of fiber pairs from the MDF to the University Core will be a minimum of 72 single-mode and 24 multimode strands.

- All connectors will be SC style unless determined otherwise by UML Network Services Department.
- All fiber is to be labeled with P-Touch or similar electronic device. Handwritten labeling is not acceptable.
• Electronic and hard copy test results are to be provided to UML Network Services Department. Any fiber that does not pass testing is to be repaired/replaced by installer.
• Contractor is to be certified in fiber termination.
• Fiber is to be 62.5 micron.
• Fiber is to be terminated in a rack complete with vertical and horizontal wire management*.
• Fiber is to be terminated at the top of the rack unless otherwise specified by UML Network Services.
• A service loop of 30 feet is to left inside the MDF and be properly secured and dressed.
• All fiber is to be in a ladder tray selected by UML Network services.

The Telephone Network requirement is different for a traditional TDM solution versus a VoIP solution. All newly renovated locations are encouraged to implement the VoIP solution and utilize the Data Network fiber. There are circumstances that in renovated spaces, using the existing traditional TDM solution is the most cost effective. Please see Voice Services section for more details.

**Floor Terminal Specifications (IDF)**

These closet specifications are for all closets including the IDF’s and the MDF. The MDF has additional requirements (see next section).

• Construction is to be no smaller than 8’ x 8’
• Door must swing out and not into the closet and width of door must meet industry standards.
• Network closets are to be accessible from hallway areas and not located inside other rooms.
• At least one 4’ x 8’ raised ¾” fire-rated plywood or plywood which is painted with at least two coats of fire resistant white paint shall be in each closet and the location will be determined by Network Services staff member.
• Closets are not to be shared with other building services, such as electrical and custodial. Reasoning is due to potential EMF interference and possible threat of damage to the equipment and wiring.
• Telecommunications closets shall not contain any type of sink, be used as custodial supplies storage or be used general storage areas (books, furniture, etc.).
• A standard University Network Services master key is needed to secure these closets.
• Floors in telecommunications closets shall be static resistant tiles. *Carpeted floors are unacceptable.*
• Where possible, telecommunication closets will be stacked on each floor.
• Each telecommunications closet will have a minimum of three (3) four inch sleeved core holes between floors. Empty core holes will be properly fire-stopped according to local code.

* See Appendix A for Network Services Approved Parts List
• All cables shall have a minimum of 30 foot service loops inside the MDF and shall have a minimum of 4 inch service loop at the workstation outlet.
• Adequate lighting is required throughout the closet space.
• All metal components (racks, ladder tray, etc) are to be properly grounded per local code and industry standards.
• There will be at least one 4-post equipment rack in each closet.
• All racks need to be bolted to the floor.
• Electrical in each IDF is to include:
  o 120V 20AMP circuits with duplex receptacles
  o 30 AMP 120V twist lock receptacle on backup generator
  o Location of these outlets will be determined by UML Network Services Department.
• If there is a generator for the building, then a dedicated circuit is to be provided to the MDF and each IDF.
• All closets need ventilation, exhaust fans are acceptable. If possible, HVAC would be good but is not a requirement.
• All copper terminations for data in the closet are to be punched down on an high density 24 port category 6 or higher patch panel per university standards*.
• All patch panels are to be located in a rack per UML Network Services determination.
• Cable terminations on the patch panels must be in numerical order by room number starting on the top of the rack. Even in a VoIP installation, all cables in each location will be patched together. For example, in room 101, in location 1, all 4 cables will be punched down next to each other (i.e. 101-1a, 101-1b, 101-1c and 101-1d) regardless of voice or data usage.
• There is to be two university standard* patch cords purchased for every network cable location included in installation. One must be white (voice style) and the other green (data style).

Workstation Conduits, Wiremold and Outlet:
All cable drops must have a minimum of 2 voice (category 6) and 2 data (category 6) unless specified differently by Network Services.
• Each resident in a resident hall or office space is provided, at a minimum, one cable drop consisting of four copper cables (2 voice and 2 data).
• Any office space greater than 8’ x 8’ should have a minimum of 2 cable drops with four copper cables (2 voice and 2 data).
• Any non-office space greater than 8’x8’ will need to have at least one cable drop consisting of four copper cables (2 voice and 2 data). Any exceptions need to be run by the Network Services department.
• Locations of the cable drops are to be on opposite sides of the room, enclosed within the walls and conduit provided to each location. Metal conduit is to be one inch (1”). Any unused conduits are to have a pull string left in place.
• Any unused gang openings will be filled with a blank module filler*.

* See Appendix A for Network Services Approved Parts List
Information Technology
Network Engineering and Architecture

- All cables shall have a minimum of 30 foot service loops inside the MDF and shall have a minimum of 4 inch service loop at the workstation outlet.
- Adequate lighting is required throughout the closet space.
- All metal components (racks, ladder tray, etc) are to be properly grounded per local code and industry standards.
- There will be at least one 4-post equipment rack in each closet.
- All racks need to be bolted to the floor.
- Electrical in each IDF is to include:
  - 120V 20AMP circuits with duplex receptacles
  - 30 AMP 120V twist lock receptacle on backup generator
  - Location of these outlets will be determined by UML Network Services Department.
- If there is a generator for the building, then a dedicated circuit is to be provided to the MDF and each IDF.
- All closets need ventilation, exhaust fans are acceptable. If possible, HVAC would be good but is not a requirement.
- All copper terminations for data in the closet are to be punched down on an high density 24 port category 6 or higher patch panel per university standards.
- All patch panels are to be located in a rack per UML Network Services determination.
- Cable terminations on the patch panels must be in numerical order by room number starting on the top of the rack. Even in a VoIP installation, all cables in each location will be patched together. For example, in room 101, in location 1, all 4 cables will be punched down next to each other (ie 101-1a, 101-1b, 101-1c and 101-1d) regardless of voice or data usage.
- There is to be two university standard patch cords purchased for every network cable location included in installation. One must be white (voice style) and the other green (data style).

**Workstation Conduits, Wiremold and Outlet:**

All cable drops must have a minimum of 2 voice (category 6) and 2 data (category 6) unless specified differently by Network Services.

- Each resident in a resident hall or office space is provided, at a minimum, one cable drop consisting of four copper cables (2 voice and 2 data).
- Any office space greater than 8’ x 8’ should have a minimum of 2 cable drops with four copper cables (2 voice and 2 data).
- Any non-office space greater than 8’x8’ will need to have at least one cable drop consisting of four copper cables (2 voice and 2 data). Any exceptions need to be run by the Network Services department.
- Locations of the cable drops are to be on opposite sides of the room, enclosed within the walls and conduit provided to each location. Metal conduit is to be one inch (1”). Any unused conduits are to have a pull string left in place.
- Any unused gang openings will be filled with a blank module filler.

* See Appendix A for Network Services Approved Parts List
- In the event that the cabling can not be run behind the walls, wire mold is required*, i.e. existing buildings with concrete walls.
- The height of the network location is to meet industry cable standards.
- Each cable drop will be labeled as (room#-drop#). The drop # is determined by walking into the room and numbering the cable drops from left to right working in a clockwise direction. All labels are to be electronically labeled with a P-touch or similar device, no handwritten labeling is accepted.
- **Wireless access point (AP)** pulls are to be university standard (See Wireless Specification for more details)
- **Timeclock** pulls (if required) are to be done with Pink category 6 cabling.*
- Any **One Card** (Vending / Laundry) pulls are required to be done with Orange category 6 cabling*.
- All **CCTV / IP based security camera** pulls are required to be done with Pink category 6 cabling*.
- University standard faceplates* are to be used and university standard icons are required on all cable drops. In the case of overhead service carrier connections, typically found in lab environments, angled faceplates are not a requirement.

Color codes of wiring:

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Position Letter</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice 1</td>
<td>A</td>
<td>Fog White</td>
</tr>
<tr>
<td>Voice 2</td>
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<td>Gray</td>
</tr>
<tr>
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<td>Light blue</td>
</tr>
<tr>
<td>Data 2</td>
<td>D</td>
<td>Yellow</td>
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Example of standard layout:

**Wireless Specifications:**

* See Appendix A for Network Services Approved Parts List
As part of the overall university wireless initiative, all renovations must include wireless cabling. As noted in the Pre-Bid section, the final design specifications must include the University Approved Room numbers and the University Approved wireless access point locations. The approved wireless access point locations are determined by submitting the design specification in pdf format to the Information Technology – Network Engineering / Planning team. This team needs at a minimum, two weeks to review the plan and provide the physical termination locations for the access points.

Each access point (AP) location will consist of two standard green category 6 cables terminated in a faceplate either on the ceiling or on the wall (10” below the finished ceiling) but not higher than 10 feet off the floor. The location of these data drops will NOT be above the ceiling. The other end of the cable will be in the closet punched down in a patch panel and labeled per Network Services standard.

In addition to running and terminated the wireless locations, the cabling vendor is responsible for mounting the access points. The access points will be purchased and configured by the university but the cabling vendor is responsible for providing the 1’ patch cord, patching in the AP and mounting it with the provided mounting hardware in the appropriate locations (again specified by the university).

**One Card Specifications (Laundry / Vending Machines):**
Due to the nature of One Card machines (laundry / vending etc) being in unsecured areas, the university is requiring a special more secure jack for these locations. The jack (Ortronics Part # OR-403TJUSG), also noted in the Appendix A of this document, allows for a secure data drop in these unsecured locations. Note also, that there may be height requirements for these applications as well. For example, vending locations must have this jack located 75 inches off of the floor. All cabling, TracJack Modules and Faceplate icons for these applications must be orange.*

**Voice Network:**
As noted in the **Riser and Distribution Cabling, Conduit and Cable Tray** section, the voice network could be either traditional TDM or VoIP. All newly renovated locations are encouraged to implement the VoIP solution and utilize the Data Network fiber. There are circumstances that in renovated spaces, using the existing traditional TDM solution is the most cost effective. The cabling from the workstation for the VoIP solution is punched down exactly like the data network connections on a patch panel. The cabling from the workstation for the TDM solution is punched on 110 Blocks. (See diagrams below)
VoIP:

![VoIP Diagram]

This solution is the recommended voice solution for new renovations on campus. Although this solution utilizes the Data Network Fiber, it will still require a small amount of riser pairs for emergency and elevator phones. The VoIP solution requires VoIP ready phones. It also requires a UPS and an Audio Codes Box (IP to analog converter appliance) for fax machines and other analog dependent equipment.

Conventional TDM:

![Conventional TDM Diagram]

This solution can be used in renovations that do not require additional house pairs. Once the cost of running additional house pairs to the terminated location is factored in, the TDM solution no longer makes financial or strategic sense for the university. For those situations the following specifications need to be used:

- Two pair crosswire is used to provide dial tone. All cross wiring is performed with B/Wh Or/Wh two pair cat 6 24 awg.
Copper for voice services is to be terminated on category 6 or higher with appropriate 110 blocks on a raised backboard. All cables are to be terminated according to EIA/TIA 568-A Cat 6 standards.

- Station locations are to be terminated to the right of the riser pair terminations.
- All riser and station terminations are to be electronically labeled with a P-touch or similar device, no handwritten labeling is accepted.
- Riser cables will be terminated on 110 style punch down blocks.
- Punch-down order should follow traditional USOC color code order for multi-pair telephone cables punched on 110 Blocks.
- The amount of riser cable to IDF will be dependent upon the amount of stations needed to be fed.

**Switch Vendor:**
Due to compatibility and maintenance requirements, UML has chosen a single switch provider throughout campus. All switch gear must be Extreme Networks equipment and quotes must be provided through the Network Services department to ensure all components necessary are ordered.

**Certification Requirements:**
The Telecommunications contractor must be an approved Ortronics Certified Installer (CI) or an approved Ortronics Certified Installer Plus (CIP) member. A copy of certification documents must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with the Ortronics CI/CIP Program. Ortronics will extend a 15 Year Extended Product Warranty (for CI members) or a NetClear 25-year Warranty (for CIP members) to the end user (UML) once the Telecommunications contractor fulfills all requirements under Ortronics CI/CIP Program. For any project over 10 network drops, UML shall require a numbered certificate, from Ortronics, registering the installation for an extended warranty.

**Documentation Requirements:**
All cabling, both fiber and copper are to have test results submitted to UMass Lowell Network Services Department. Test results are to be submitted on a CD or another form of appropriate media acceptable to UMass Lowell. The disk shall be clearly marked on the outside front cover with the words “Project Test Documentation”, the project name, and the date of completion (month and year). The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document.

An electronic CAD drawing accurately reflecting all cable drop locations and corresponding labeling must be submitted to UMass Lowell Network Services on a CD.
Copper for voice services is to be terminated on category 6 or higher with appropriate 110 blocks on a raised backboard. All cables are to be terminated according to EIA/TIA 568-A Cat 6 standards.

- Station locations are to be terminated to the right of the riser pair terminations.
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An electronic CAD drawing accurately reflecting all cable drop locations and corresponding labeling must be submitted to UMass Lowell Network Services on a CD.
or another form of appropriate media acceptable to UMass Lowell. Three printed copies of the CAD drawings must be submitted to UMass Lowell Network Services.

Digital photos of MDF’s and IDF’s are to be submitted at the completion of the project.
APPENDIX A – NETWORK SERVICES APPROVED PARTS LIST

**Faceplates:** Ortronics Category 6 TracJack Modules

<table>
<thead>
<tr>
<th>Part Numbers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-40300158</td>
<td>Series II Single Gang Faceplates**</td>
</tr>
<tr>
<td>OR-40300656</td>
<td>Series II TracJack Angled Bezel</td>
</tr>
<tr>
<td>OR-S21600</td>
<td>Series II, 1 unit, Category 6, 1 Port – for wall phones</td>
</tr>
<tr>
<td>OR-403TJUSG</td>
<td>Secured TracJack Wall Plate – for vending / laundry</td>
</tr>
<tr>
<td>OR-42100002</td>
<td>TracJack Blank Modules *</td>
</tr>
</tbody>
</table>

Ortronics - Category 6 Series II TracJack

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-TJ600</td>
<td>Fog White</td>
</tr>
<tr>
<td>OR-TJ600-26</td>
<td>Light Blue</td>
</tr>
<tr>
<td>OR-TJ600-24</td>
<td>Light Yellow</td>
</tr>
<tr>
<td>OR-TJ600-68</td>
<td>Gray</td>
</tr>
<tr>
<td>OR-TJ600-25</td>
<td>Light Green</td>
</tr>
<tr>
<td>OR-TJ600-22</td>
<td>Pink</td>
</tr>
<tr>
<td>OR-TJ600-23</td>
<td>Orange</td>
</tr>
</tbody>
</table>

**Faceplates Icons:** Ortronics

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-40309100</td>
<td>Fog White (voice)</td>
</tr>
<tr>
<td>OR-40326200</td>
<td>Light Blue (data)</td>
</tr>
<tr>
<td>OR-40324200</td>
<td>Light Yellow (data)</td>
</tr>
<tr>
<td>OR-40328100</td>
<td>Gray (voice)</td>
</tr>
<tr>
<td>OR-40322200</td>
<td>Pink (data) *Timeclocks</td>
</tr>
<tr>
<td>OR-40325200</td>
<td>Green (data) * Wireless pulls</td>
</tr>
<tr>
<td>OR-40323200</td>
<td>Orange (data) *One Card pulls – vending / laundry etc</td>
</tr>
</tbody>
</table>

**Patch Panels:** Ortronics - Category 6

| OR-PHD66U24 | 24 Port, High Density, 568A/B Wired Patch Panel |

**Patch Cords:** Ortronics - Category 6

*Standard Patch Cord Colors for Category 6 are Green

| OR-MC607-05 | 4 pair, 7ft, Green, Patch Cable |

**Cable:** Berk-tek: LanMark 1000 Category 6.

Note: LanMark 2000 Category 6 may be required per Network Services.

<table>
<thead>
<tr>
<th>PVC</th>
<th>Plenum</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>10032459</td>
</tr>
<tr>
<td>Blue</td>
<td>10032455</td>
</tr>
<tr>
<td>Gray</td>
<td>10032452</td>
</tr>
<tr>
<td>Yellow</td>
<td>10032461</td>
</tr>
<tr>
<td>Pink</td>
<td>10042063</td>
</tr>
<tr>
<td>Green</td>
<td>10032479</td>
</tr>
</tbody>
</table>
Equipment Racks: Ortronics Mighty Mo 6

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MM6706</td>
<td>7 ft Mighty Mo 6 Cable Mgmt 2 post Rack (6.5 inch channel depth)</td>
</tr>
<tr>
<td>OR-MM67SVR</td>
<td>7 ft Mighty Mo 6 Cable Mgmt 4 post Rack (6.5 inch channel depth)</td>
</tr>
</tbody>
</table>

Wire Management: Ortronics Mighty Mo 6

Cage with latches:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MM6VML704</td>
<td>7 ft Mighty Mo 6 Cable Management Rack (4” wide)</td>
</tr>
</tbody>
</table>

Door:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-MM6VMD706</td>
<td>7 ft Mighty Mo 6 Cable Management Rack (4” wide)</td>
</tr>
<tr>
<td>OR-MM6HM62RU</td>
<td>Mighty Mo 6 Horizontal Cable Management Panel, six-port finger spacing, cover, 2 rack units (3.5” x 19”), black</td>
</tr>
</tbody>
</table>

Fiber Cable: Berk-tek (all multimode fiber is 62.5 micron)

72 Single Mode / 48 MultiMode Composite Fiber:

- Premise Style Plenum – PDP12B120-048CB3510/25-072AB0707
- Riser Rated – PDR12B120-048CB3510/25-072AB0707
- Armored- Plenum - PDPK12B120-048CB3510/25-072AB0707
- Riser Rated - PDRK12B120-048CB3510/25-072AB0707

Outside Plant Plenum – LTP12B120-048CB3510/25-072AB0403

- Riser Rated-LTR12B120-048CB3510/25-072AB0403
- Armored Plenum – LTPK12B120-048CB3510/25-072AB0403
- Riser Rated- LTRK12B120-048CB3510/25-072AB0403

48 Single Mode/ 24 Multi Mode Composite Fiber

- Premise Style Plenum – PDP12B072-024CB3510/25-048AB0707
- Riser Rated – PDR12B072-024CB3510/25-048AB0707
- Armored- Plenum – PDPK12B072-024CB3510/25-048AB0707
- Riser Rated - PDRK12B072-024CB3510/25-048AB0707

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- Riser Rated- LTP12B072-024CB3510/25-024AB0403
- Armored Plenum – LTPK12B072-024CB3510/25-024AB0403
- Riser Rated- LTRK12B072-024CB3510/25-024AB0403

Fiber Boxes: Rack Mounted

- OR-FC02U-P Rack Mount Fiber Cabinet- Holds 6 adapter panels
- OR-OFP-SCD12LC Multimode Adapter panels
- OR-OFP-SCD12AC Singlemode Adapter panels
- OR-OFP-BLANK Blank Adapter Panel

Note: Adapter Panels have 6 duplex SC per panel = 12 fibers terminated per panel
APPENDIX B – NETWORKING FACEPLATE DIAGRAM/SYMBOLS

NOTE: VOICE & DATA ICONS ARE TO BE USED AND MATCH MODULE COLOR.

PART NUMBERS:
- DR-40300100 = VOICE FOG WHITE
- DR-40328100 = VOICE GRAY
- DR-40329200 = DATA BLUE
- DR-40324200 = DATA YELLOW

- DR-403200158 (x1) SERIES II FACE PLATE, FOG WHITE
- DR-432000500 (x2) SERIES II ANGLED BEZEL
  ACCEPTS TWO TJ MODULES 1.5 UNITS
- DR-TJ600-XX? (x1) TRACJack MODULE CAT 6, GRAY
- DR-TJ600-XX? (x1) TRACJack MODULE CAT 6, LIGHT BLUE
- DR-TJ600-XX? (x1) TRACJack MODULE CAT 6, YELLOW

TELEPHONE OUTLET DETAIL:
- FOG WHITE
- GRAY
- LIGHT BLUE
- DATA
- YELLOW

DATA OUTLET DETAIL:
- FOG WHITE
- DATA
- GREEN
- DATA
- PINK

VOICE ONLY OUTLET DETAIL:
- FOG WHITE
- DATA
- DATA

DATA (Wireless AP) OUTLET DETAIL:
- FOG WHITE
- DATA

DATA ONLY OUTLET DETAIL:
- FOG WHITE
- DATA
- DATA
- DATA

ONE CARD OUTLET DETAIL:
- FOG WHITE
- DATA
- DATA
- DATA

CCTV OUTLET DETAIL:
- FOG WHITE
- DATA
- DATA
- DATA

SYMBOLS:
- TEL
- DATA
- GRAY

OUTLET DETAILS:
- TELEPHONE
- DATA
- GRAY
APPENDIX C – MARGINAL WAY SPECIFIC SPECIFICATIONS

Due to the leaseback nature of the Marginal Way Residence Hall, the following specification changes have been made in addition to the standard UML Networking Specs.

Access:
The Network Services department will be required to have 24x7 access to the building and all their closets.

Cable Drop Specifications:
All cable drops must use category 6 cabling unless specified differently by Network Services.

- In a bedroom with 2 beds, there would be 2 drops with 1 category 6 cable each
- All suite or apartment common rooms are required to have a minimum of 1 cable drop with two category 6 cables adjacent to the coax TV cable.
- All wireless AP locations will have 2 category 6 cables.
- Data connections will use category 6 blue cabling and wireless access point connections will use green category 6 cabling.
- Any unused ganged openings will be filled with blank module fillers*.
- Locations of the cable drops are to be on opposite sides of the room, enclosed within the walls and conduit provided to each location. Metal conduit is to be one inch (1”). Any unused conduits are to have a pull string left in place.
- In the event that the cabling cannot be run behind the walls, wire mold is required*, i.e. existing buildings with concrete walls.
- The height of the network location is to meet industry cable standards.

Each cable drop will be labeled as (room#-drop#). The drop # is determined by walking into the room and numbering the cable drops from left to right working in a clockwise rotation.

Paging System
Provide new multizone one-way paging system manufactured by Valcom. Speakers shall be 8 inch white Valcom P/N V1020, include ceiling bridge and backbox. Page control shall be Valcom 6 zone one-way page P/N V-2006A and V-9970. Power supply shall be Valcom P/N VP4124. Valcom paging system cabling shall be category 6 Berk-Tek P/N 10032094. See riser diagram below
In the event that the cabling can not be run behind the walls, wire mold is required*, i.e. existing buildings with concrete walls.

- The height of the network location is to meet industry cable standards.
- Each cable drop will be labeled as (room#-drop#). The drop # is determined by walking into the room and numbering the cable drops from left to right working in a clockwise direction. All labels are to be electronically labeled with a P-touch or similar device, no handwritten labeling is accepted.

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<tr>
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Each access point (AP) location will consist of two standard green category 6 cables terminated in a faceplate either on the ceiling or on the wall (10” below the finished ceiling) but not higher than 10 feet off the floor. The location of these data drops will NOT be above the ceiling. The other end of the cable will be in the closet punched down in a patch panel and labeled per Network Services standard.

In addition to running and terminated the wireless locations, the cabling vendor is responsible for mounting the access points. The access points will be purchased and configured by the university but the cabling vendor is responsible for providing the 1’ patch cord, patching in the AP and mounting it with the provided mounting hardware in the appropriate locations (again specified by the university).

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**Documentation Requirements:**
All cabling, both fiber and copper are to have test results submitted to UMass Lowell Network Services Department. Test results are to be submitted on a CD or another form of appropriate media acceptable to UMass Lowell. The disk shall be clearly marked on the outside front cover with the words “Project Test Documentation”, the project name, and the date of completion (month and year). The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document.

An electronic CAD drawing accurately reflecting all cable drop locations and corresponding labeling must be submitted to UMass Lowell Network Services on a CD.
• Copper for voice services is to be terminated on category 6 or higher with appropriate 110 blocks on a raised backboard. All cables are to be terminated according to EIA/TIA 568-A Cat 6 standards.
• Station locations are to be terminated to the right of the riser pair terminations.
• All riser and station terminations are to be electronically labeled with a P-touch or similar device, no handwritten labeling is accepted.
• Riser cables will be terminated on 110 style punch down blocks.
• Punch-down order should follow traditional USOC color code order for multi-pair telephone cables punched on 110 Blocks.
• The amount of riser cable to IDF will be dependent upon the amount of stations needed to be fed.

**Switch Vendor:**
Due to compatibility and maintenance requirements, UML has chosen a single switch provider throughout campus. All switch gear must be Extreme Networks equipment and quotes must be provided through the Network Services department to ensure all components necessary are ordered.

**Certification Requirements:**
The Telecommunications contractor must be an approved Ortronics Certified Installer (CI) or an approved Ortronics Certified Installer Plus (CIP) member. A copy of certification documents must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with the Ortronics CI/CIP Program. Ortronics will extend a 15 Year Extended Product Warranty (for CI members) or a NetClear 25-year Warranty (for CIP members) to the end user (UML) once the Telecommunications contractor fulfills all requirements under Ortronics CI/CIP Program. For any project over 10 network drops, UML shall require a numbered certificate, from Ortronics, registering the installation for an extended warranty.

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Digital photos of MDF’s and IDF’s are to be submitted at the completion of the project.
APPENDIX A – NETWORK SERVICES APPROVED PARTS LIST

**Faceplates:** Ortronics Category 6 TracJack Modules
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<th>Part Numbers</th>
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<td>Series II TracJack Angled Bezel</td>
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<td>OR-S21600</td>
<td>Series II, 1 unit, Category 6, 1 Port – for wall phones</td>
</tr>
<tr>
<td>OR-403TJUSG</td>
<td>Secured TracJack Wall Plate – for vending / laundry</td>
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<tr>
<td>OR-42100002</td>
<td>TracJack Blank Modules *</td>
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**Faceplates Icons:** Ortronics
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</tr>
<tr>
<td>OR-TJ600-23</td>
<td>Orange</td>
</tr>
</tbody>
</table>

**Patch Panels:** Ortronics - Category 6
| OR-PHD66U24   | 24 Port, High Density, 568A/B Wired Patch Panel |

**Patch Cords:** Ortronics - Category 6
*Standard Patch Cord Colors for Category 6 are Green
| OR-MC607-05   | 4 pair, 7ft, Green, Patch Cable |

**Cable:** Berk-tek: LanMark 1000 Category 6.
Note: LanMark 2000 Category 6 may be required per Network Services.

<table>
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### Equipment Racks: Ortronics Mighty Mo 6

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<tbody>
<tr>
<td>OR-MM6706</td>
<td>7 ft Mighty Mo 6 Cable Mgmt 2 post Rack (6.5 inch channel depth)</td>
</tr>
<tr>
<td>OR-MM67SVR</td>
<td>7 ft Mighty Mo 6 Cable Mgmt 4 post Rack (6.5 inch channel depth)</td>
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### Wire Management: Ortronics Mighty Mo 6

#### Cage with latches:

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<tr>
<td>OR-MM6VML704</td>
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</tr>
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</table>

#### Door:

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<td>OR-MM6VMD706</td>
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<tr>
<td>OR-MM6HM62RU</td>
<td>Mighty Mo 6 Horizontal Cable Management Panel, six-port finger spacing, cover, 2 rack units (3.5” x 19”), black</td>
</tr>
</tbody>
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### Fiber Cable: Berk-tek (all multimode fiber is 62.5 micron)

#### 72 Single Mode / 48 MultiMode Composite Fiber:

- Premise Style Plenum – PDP12B120-048CB3510/25-072AB0707
- Riser Rated – PDR12B120-048CB3510/25-072AB0707
- Armored- Plenum - PDPK12B120-048CB3510/25-072AB0707
- Riser Rated - PDRK12B120-048CB3510/25-072AB0707

#### Outside Plant Plenum – LTP12B120-048CB3510/25-072AB0403

- Riser Rated-LTR12B120-048CB3510/25-072AB0403
- Armored Plenum – LTPK12B120-048CB3510/25-072AB0403
- Riser Rated- LTRK12B120-048CB3510/25-072AB0403

#### 48 Single Mode / 24 Multi Mode Composite Fiber

- Premise Style Plenum – PDP12B072-024CB3510/25-048AB0707
- Riser Rated – PDR12B072-024CB3510/25-048AB0707
- Armored- Plenum - PDPK12B072-024CB3510/25-048AB0707
- Riser Rated - PDRK12B072-024CB3510/25-048AB0707

#### Outside Plant Plenum – LTP12B072-024CB3510/25-024AB0403

- Riser Rated-LTR12B072-024CB3510/25-024AB0403
- Armored Plenum – LTPK12B072-024CB3510/25-024AB0403
- Riser Rated- LTRK12B072-024CB3510/25-024AB0403

### Fiber Boxes: Rack Mounted

- OR-FC02U-P Rack Mount Fiber Cabinet- Holds 6 adapter panels
- OR-OFP-SCD12LC Multimode Adapter panels
- OR-OFP-SCD12AC Singlemode Adapter panels
- OR-OFP-BLANK Blank Adapter Panel

Note: Adapter Panels have 6 duplex SC per panel = 12 fibers terminated per panel
APPENDIX B – NETWORKING FACEPLATE DIAGRAM/SYMBOLS

NOTE: VOICE & DATA ICONS ARE TO BE USED AND MATCH MODULE COLOR.

PART NUMBERS:
DR-40309100 = VOICE FOG WHITE
DR-40328100 = VOICE GRAY
DR-40329200 = DATA BLUE
DR-40334200 = DATA YELLOW

DR-40330150 (x1) SERIES II FACE PLATE, FOG WHITE
DR-43200050 (x2) SERIES II ANGLED BEZEL
ACCEPTS TWO TJ MODULES 1.5 UNITS

DR-TJ600 (x1) TRACJACK MODULE CAT 6, FOG WHITE
DR-TJ600-28 (x1) TRACJACK MODULE CAT 6, LIGHT BLUE
DR-TJ600-XX? (x1) TRACJACK MODULE CAT 6, YELLOW

TEL DATA
OUTLET DETAIL

VOICE ONLY OUTLET DETAIL

DATA (WIRELESS AP)
OUTLET DETAIL

CCTV OUTLET DETAIL

ONE CARD
OUTLET DETAIL

DATA ONLY
OUTLET DETAIL

DATA

VOICE

CCTV

WIRELESS AP
Due to the leaseback nature of the Marginal Way Residence Hall, the following specification changes have been made in addition to the standard UML Networking Specs.

Access:
The Network Services department will be required to have 24x7 access to the building and all their closets.

Cable Drop Specifications:
All cable drops must use category 6 cabling unless specified differently by Network Services.

- In a bedroom with 2 beds, there would be 2 drops with 1 category 6 cable each
- All suite or apartment common rooms are required to have a minimum of 1 cable drop with two category 6 cables adjacent to the coax TV cable.
- All wireless AP locations will have 2 category 6 cables.
- Data connections will use category 6 blue cabling and wireless access point connections will use green category 6 cabling.
- Any unused ganged openings will be filled with blank module fillers*.
- Locations of the cable drops are to be on opposite sides of the room, enclosed within the walls and conduit provided to each location. Metal conduit is to be one inch (1”). Any unused conduits are to have a pull string left in place.
- In the event that the cabling cannot be run behind the walls, wire mold is required*, i.e. existing buildings with concrete walls.
- The height of the network location is to meet industry cable standards.

Each cable drop will be labeled as (room#-drop#). The drop # is determined by walking into the room and numbering the cable drops from left to right working in a clockwise rotation.

Paging System
Provide new multizone one-way paging system manufactured by Valcom. Speakers shall be 8 inch white Valcom P/N V1020, include ceiling bridge and backbox. Page control shall be Valcom 6 zone one-way page P/N V-2006A and V-9970. Power supply shall be Valcom P/N VP4124. Valcom paging system cabling shall be category 6 Berk-Tek P/N 10032094. See riser diagram below

Wireless System:

This building will have a high density and wireless N capable wireless system using Aruba AP135. Each access point (AP) location will consist of two standard green category 6 cables terminated in a faceplate either on the ceiling or on the wall (10” below the finished ceiling or 10’ off the floor) with the other end in the closet punched down in a patch panel and labeled per Network Services standard. The location of these data drops will not be above the ceiling.
or another form of appropriate media acceptable to UMass Lowell. Three printed copies of the CAD drawings must be submitted to UMass Lowell Network Services.

Digital photos of MDF’s and IDF’s are to be submitted at the completion of the project.
## APPENDIX A – NETWORK SERVICES APPROVED PARTS LIST

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**Patch Panels:** Ortronics - Category 6

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**Patch Cords:** Ortronics - Category 6

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**Cable:** Berk-tek: LanMark 1000 Category 6.

Note: LanMark 2000 Category 6 may be required per Network Services.

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<td>10033811</td>
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### Fiber Cable: Berk-tek (all multimode fiber is 62.5 micron)

#### 72 Single Mode / 48 MultiMode Composite Fiber:

- Premise Style Plenum – PDP12B120-048CB3510/25-072AB0707
- Riser Rated – PDR12B120-048CB3510/25-072AB0707
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- Riser Rated - PDRK12B120-048CB3510/25-072AB0707

#### Outside Plant Plenum – LTP12B120-048CB3510/25-072AB0403

- Riser Rated-LTR12B120-048CB3510/25-072AB0403
- Armored Plenum – LTPK12B120-048CB3510/25-072AB0403
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#### 48 Single Mode/ 24 Multi Mode Composite Fiber

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<tbody>
<tr>
<td>OR-FC02U-P</td>
<td>Rack Mount Fiber Cabinet- Holds 6 adapter panels</td>
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<tr>
<td>OR-OFP-SCD12LC</td>
<td>Multimode Adapter panels</td>
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<td>OR-OFP-SCD12AC</td>
<td>Singlemode Adapter panels</td>
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Note: Adapter Panels have 6 duplex SC per panel = 12 fibers terminated per panel
APPENDIX C – MARGINAL WAY SPECIFIC SPECIFICATIONS

Due to the leaseback nature of the Marginal Way Residence Hall, the following specification changes have been made in addition to the standard UML Networking Specs.

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Wireless System:

This building will have a high density and wireless N capable wireless system using Aruba AP135. Each access point (AP) location will consist of two standard green category 6 cables terminated in a faceplate either on the ceiling or on the wall (10” below the finished ceiling or 10’ off the floor) with the other end in the closet punched down in a patch panel and labeled per Network Services standard. The location of these data drops will not be above the ceiling.
### Building Schedule

#### Tier 1 – Installed by Sept 2012
- Cumnock
- Allen House
- Tsongas Arena
- Fox Hall
- Leitch Hall
- Bourgeois Hall
- Donahue Hall
- Sheehy Hall
- Concordia Hall
- Eames Hall
- ICC
- Southwick

#### Tier 2 Installed by Dec 2012
- Dugan
- Durgin
- ETIC
- Engineering
- Ball
- Pasteur
- Kitson
- Southwick
- Wannalancit
- Suffolk Street
- Rec Center
- Lydon
  - McGauran

#### Tier 2 Installed by Dec 2012 (Continued)
- Dining Hall South
- O’Leary
- Coburn
- Mahoney
- Pinanski
- Olsen
  - Olney