

EE384A: Network Protocols and Standards

Homework #6

LAN Emulation and IP over ATM

Due Date: Thursday March 11th, 1999

This assignment pertains to the topic of interworking between LANs and ATM, and IP networks and ATM. The solution to the first problem is referred to as LAN Emulation over ATM, and the solution to the second is referred to as IP over ATM. The following documents describe the solutions and are relevant to this HW assignment. (The most important documents are listed as “Primary” documents. The others are included for reference purposes). All documents have been put on the Web.

This homework assignment is to be done in groups of two.

LAN Emulation

- Primary Documents:
 1. “*LAN Emulation over ATM, Version 1.0*”. The ATM Forum, Document af-lane-0021.000, January 1995
 2. “*LAN-Emulation over ATM version 1.0 Addendum*”. ATM Forum, Document af-lane-0050.000, December 1995
- Other References:
 1. “*LAN Emulation Servers Management Specification 1.0*”. The ATM Forum, Document af-lane -0057.000, March 1996
 2. “*LAN Emulation Client Management Specification, Version 1.0*”. The ATM Forum, Document af-lane-0038.000, September 1995

IP over ATM

- Primary Documents:
 1. “*Classical IP and ARP over ATM*”, RFC 1577
- Other References:
 1. “*Multiprotocol Encapsulation over ATM Adaptation Layer 5*”, RFC 1483

2. “ATM Signaling Support for IP Over ATM”, RFC 1755

Questions:

1. What are the reasons behind the ATM LAN Emulation and classical IP over ATM efforts?
2. What are the issues behind ATM LAN Emulation and IP over ATM?
3. Describe the architecture (the components introduced and their functionality) used in providing the solution to ATM LAN Emulation and IP over ATM.
4. What are the procedures followed in the operation of ATM LAN Emulation and IP over ATM? In your answer to this question, use illustrative examples that would invoke the various functionality and services offered by these solutions.

Note: In answering the above questions, comment on the similarities in and differences between ATM LAN Emulation and IP over ATM.

Extra Credit Question:¹

In 1997 the ATM Forum approved LANE version 2.0 (document af-lane-0084.000, “*LAN Emulation over ATM Version 2 – LUNI Specification*”, July 1997). Compare versions 1.0 and 2.0 of the standard, indicating which new features have been introduced in version 2.0. You do not need to go to the bit and packet level; stay at the concept and feature level. When describing the new features, try to figure out why these features were introduced.

About the documents

- The ATM Forum documents can be downloaded from the following ftp site:

<ftp://ftp.atmforum.com/pub/approved-specs/>

You might benefit from the following white papers:

<http://www.3com.com/nsc/500617.html>
http://www.data.com/Tutorials/Classical_IP_Over_ATM.html

- The RFCs are available on several places, including:

<http://www.cis.ohio-state.edu/hypertext/information/rfc.html>

¹ This question is optional. However, if you do answer it properly, you will get additional points that will increase your overall homework grade. Also note that this particular subject will not be in the final exam.

