



Microsoft Technology Associate Certification Exam Review Kit:

98-366 Networking Fundamentals

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About This Exam Review Kit

Microsoft Technology Associate Certification Exam Review Kit: 98-366 Networking Fundamentals

Exam Review Kit Description

- This Microsoft Technology Associate (MTA) Certification Exam Review Kit is a series of 20 review lessons intended to reinforce concepts in preparation for the *MTA Certification Exam: 98-366 Networking Fundamentals* and/or serve as a resource and guide for teachers and faculty to create their own additional student learning experiences.
- It is assumed that students taking an MTA certification exam have completed and/or are currently taking academic courses and/or job experiences that address the exam objective domain.
- The MTA Exam Review Kits:
 - Are intended to supplement (not supplant) existing academic courses
 - Are not intended to serve as foundational content for academic courses
 - Are directly and closely tied to the objective domain of each individual MTA exam
 - Are platform-specific or -agnostic in accord with the objective domain of each MTA exam.
- Because each certification exam has approximately 20 objectives, this MTA Exam Review Kit includes twenty 50-minute review lessons.
- The build of materials for each review lesson includes a lesson plan, lesson delivery materials, and student activity documents.
- MTA certification exams test breadth of technical knowledge and help students explore career options before choosing a specialized career path with minimal investment of time and money. MTA certifications measure and validate the fundamental technology skills that are in demand today and provide an essential foundation to build a career in technology. Earning MTA certification provides students with a credential that validates fundamental technology industry knowledge and motivates them to succeed in continued studies, compete on admissions, and prepare for a career in technology. The MTA certifications enable students to prove their commitment to technology and connect with a community of more than five million Microsoft Certified Professionals (MCPs).
- Teachers and faculty can easily integrate the new MTA certification exams into existing schedules and curricula, and deliver exams right in the classroom, on their own schedules.

Audience

- This Exam Review Kit is intended for students ages 15–24 years who have an interest in technology and technology careers and are preparing for the MTA Certification Exam: 98-366 Networking Fundamentals exam, and seeking to prove introductory knowledge of and skills with networking.

- It is recommended that exam candidates be familiar with the concepts of and have hands-on experience with the technologies described here either by taking relevant training courses or by working with tutorials and samples available on MSDN®. Although minimal hands-on experience with the technologies is recommended, job experience is not assumed for these exams.
- Candidates for this exam are in the process of expanding their knowledge and skills in the following areas:
 - Windows Server
 - Windows-based networking
 - Network management tools
 - DNS
 - TCP/IP
 - Names resolution process
 - Network protocols and topologies

Student Prerequisites

This course requires that you meet the following prerequisites:

- It is assumed that students taking an MTA certification exam have completed and/or are currently taking academic courses and/or job experiences that address the exam objective domain.
- It is expected that students have had experience with Windows Server and Windows-based networking.

Exam Review Kit Objective Domain

This Exam Review Kit provides lessons that reinforce previous learning in the following objectives:

1. Understanding Network Infrastructures

- 1.1. Understand the concepts of the Internet, intranet, and extranet.
This objective may include but is not limited to: VPN, security zones, firewalls.
- 1.2. Understand local area networks (LANs).
This objective may include but is not limited to: perimeter networks; addressing; reserved address ranges for local use (including local loopback IP), VLANs; wired LAN and wireless LAN.
- 1.3. Understand wide area networks (WANs).
This objective may include but is not limited to: leased lines, dial-up, ISDN, VPN, T1, T3, E1, E3, DSL, and cable and their characteristics (speed, availability).
- 1.4. Understand wireless networking.
This objective may include but is not limited to: types of wireless networking standards and their characteristics (802.11A, B, G, N including different GHz ranges), types of network security (for example, WPA/WEP/802.1X), point-to-point (P2P) wireless, wireless bridging.
- 1.5. Understand network topologies and access methods.
This objective may include but is not limited to: star, mesh, and ring.

2. Understanding Network Hardware

2.1. Understand switches.

This objective may include but is not limited to: transmission speed; number and type of ports; number of uplinks; speed of uplinks; managed or unmanaged switches; VLAN capabilities; Layer 2 and Layer 3 switches, security options; hardware redundancy; support; backplane speed; switching types, MAC table; understanding capabilities of hubs vs. switches.

2.2. Understand routers.

This objective may include but is not limited to: transmission speed considerations, directly connected routes, static routing, dynamic routing (routing protocols), default routes; routing table and how it selects best routes; routing table memory, NAT, software routing in Windows Server.

2.3. Understand media types.

This objective may include but is not limited to: cable types and their characteristics, including media segment length and speed; fibre optic; twisted pair shielded or non-shielded; cabling, wireless; susceptibility to external interference (for example, machinery, power cables); susceptibility to electricity (for example, lightning), susceptibility to interception.

3. Understanding Protocols and Services

3.1. Understand the OSI model.

This objective may include but is not limited to: OSI model; TCP model; examples of devices, protocols, and applications and which OSI/TCP layer they belong to; TCP and UDP; well-known ports for most-used purposes (not necessarily Internet); packets and frames.

3.2. Understand IPv4.

This objective may include but is not limited to: addressing, subnetting; NAT, static IP, gateway; APIPA; network classes, classful/classless IP addressing;; reserved address ranges for local use (including local loopback IP).

3.3. Understand IPv6.

This objective may include but is not limited to: subnetting; IPconfig; why use IPv6; addressing; IPv4toIPv6 tunneling protocols to ensure backwards compatibility; dual IP stack; subnetmask; gateway; ports; packets; reserved address ranges for local use (including local loopback IP)

3.4. Understand names resolution.

This objective may include but is not limited to: DNS, WINS, steps in the name resolution process

3.5. Understand networking services.

This objective may include but is not limited to: DHCP, IPsec, remote access

3.6. Understand TCP/IP.

This objective may include but is not limited to: tools such as ping; tracert; pathping; Telnet; IPconfig; netstat, reserved address ranges for local use (including local loopback IP); protocols.

Exam Review Kit Timing

Each of the 20 Review Lessons in this collection is intended to be used in a single 50-minute class period.

Exam Review Kit Materials

The following materials are included in this Exam Review Kit:

- Review Lessons: A plan for teacher and student activities in reviewing the learning objectives and providing the key points that are critical to the success of the in-class review experience.
- Microsoft® PowerPoint® presentations: A structure for classroom lectures and discussions.
- Student activities: A hands-on platform for applying the knowledge and skills reviewed in the lesson.
- Student activity answer keys: Solutions to student activities.
- Additional resources: Various resources to expand the reviewing and learning opportunities.

Software Requirements

The following software is suggested for this series of review lessons:

- Windows XP or Windows 7
- Windows Server 2008

Instructional Preparation Activities

It is highly recommended that you complete the following instructional preparation activities:

- Familiarize yourself with the objectives of each lesson.
- Walk through each Review Lesson presentation slide deck and read the corresponding Instructor Notes (located in the notes view of the presentation slide deck) for the lesson. *Note that additional hidden slides are used in each slide deck to accommodate the amount of Instructor Notes information for a given topic.*
- Familiarize yourself with the student activity.
- Practice presenting each module.
- Identify the key points and must-know information for each topic.
- Perform each demonstration and hands-on lab.
- Anticipate the questions that students might have.
- Identify examples, analogies, impromptu demonstrations, and additional delivery tips that will help to clarify module content and provide a more meaningful learning experience for your specific audience.
- Customize and enhance your instructor notes.

Review the updated information about the Microsoft Certification Program on the Microsoft Learning Certifications website

(<http://www.microsoft.com/learning/en/us/certification/certdefault.aspx>).

About the Authors

Roseann Rayes Krane

Roseann Rayes Krane taught business administration in community colleges for 15 years, and then redirected her focus when personal computers became popular. She started a computer business building and supplying PCs to schools and businesses as well as installing networking systems. She received an advanced degree in Computer Education and developed a new Computer Science department at Monte Vista High School in Danville, California, where she taught programming and networking. She also taught summer workshops for students at the Lawrence Livermore Department of Energy Laboratory. In competitions she and her students won six National Science Foundation grants, three National Supercomputing competitions, a Smithsonian competition, and two International ThinkQuest competitions where they presented in Geneva Switzerland. Her most exciting moment was when her team of students presented their program written in C# on stage with Bill Gates at the debut of Visual Studio 2003.



Patricia Philips

Patricia taught computer science for 20 years in Janesville, Wisconsin. She served on Microsoft's National K–12 Faculty Advisory Board and edited the Microsoft MainFunction website for technology teachers for two years. For the past four years, she has worked with Microsoft in a variety of roles related to K–12 curriculum development and pilot programs, including Web design and XNA. In her role as an author and editor, Patricia wrote several articles and a student workbook on topics including computer science, Web design, and computational thinking. She is currently the editor of the Computer Science Teachers Association newsletter, the *Voice*.



Peer and Technical Reviewers

Paul Akuna

Paul teaches computer technology, intermediate and advanced computers, and Web development at Franklin High School in Elk Grove, California. As an adjunct college professor, he has taught database technologies, computer presentation graphics, systems analysis, networking and Internet at the graduate and undergraduate levels.

Additionally Paul has 30 years as a working professional in the IT field including chief technology architect, chief of computer services, director of computer services, technical project manager, technical manager, applications supervisor, programmer, and computer auditor.

Shari Due

Shari is an IT network specialist instructor at Gateway Technical College in Racine, Wisconsin, where she has worked for the past 15 years. Previously, she worked for Digital Equipment Corporation (DEC) in Elk Grove, Illinois. She holds a bachelor of science from the University of Wisconsin-Parkside in Math and Economics with a minor in Computer Science and an MBA from the University of Wisconsin-Eau Claire. Current industry certifications include: Comptia Server+, Linux+, A+, Network+, and i-Net+. Past certifications include: MCSE-NT 4.0, CCNA, and Pathworks for Macintosh. She is a Cisco Certified Instructor for Cisco's Network Academy and teaches the CCNA curriculum. She has published the book *Advanced WordPerfect Using Macro Power: A Guide for VMS and DOS Users* by Digital Press.

Tim McMichael

Tim has been a high school computer science teacher for the past 11 years. He currently teaches advanced placement computer science, .NET programming, and computer game programming at Raymond S. Kellis High School in Glendale, Arizona. Prior to teaching, Tim worked for several years as a database application developer. Tim is the author of the Windows Development Exam Review Kit in the Developer Exam Review Kit series.

Terrel Smith

Terrel Smith has been teaching computer science in Oregon at the Sherwood School District for 30 years. He earned an MA from Western Oregon University and the Professional Technical Certification from the State of Oregon and recently completed the George Fox University's Administrative licensure program. He is an adjunct professor at George Fox University in Newberg, Oregon, where he teaches technology classes for educators. He has served on panels and taught educators from across the state of Oregon in the SuperQuest Summer Institute sponsored by the Software Associates of Oregon. He has recently been involved in developing and promoting computer game design curriculum for his secondary students at Sherwood High School, and has taught teachers how to incorporate game design into their middle school and high school technology curriculums. Terrel is the current president of the Oregon Computer Science Teachers' Association.

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Project Manager: Valerie Woolley, Microsoft Learning

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Technical Editor: Zeshan Sattar

Copyeditor: Jean Ives, Words Unleashed