

[MS-RASA]: Remote Access Server Advertisement (RASADV) Protocol

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Contents

1 Introduction	5
1.1 Glossary	5
1.2 References	5
1.2.1 Normative References	5
1.2.2 Informative References	6
1.3 Overview	6
1.4 Relationship to Other Protocols	6
1.5 Prerequisites/Preconditions	6
1.6 Applicability Statement	6
1.7 Versioning and Capability Negotiation	6
1.8 Vendor-Extensible Fields	6
1.9 Standards Assignments	6
2 Messages	7
2.1 Transport	7
2.2 Message Syntax	7
2.2.1 Server Advertisement	7
3 Protocol Details	8
3.1 RAS Server Details	8
3.1.1 Abstract Data Model	8
3.1.2 Timers	8
3.1.3 Initialization	8
3.1.4 Higher-Layer Triggered Events	8
3.1.5 Message Processing Events and Sequencing Rules	8
3.1.6 Timer Events	8
3.1.7 Other Local Events	8
3.2 Listener Details	8
3.2.1 Abstract Data Model	8
3.2.2 Timers	8
3.2.3 Initialization	9
3.2.4 Higher-Layer Triggered Events	9
3.2.5 Message Processing Events and Sequencing Rules	9
3.2.6 Timer Events	9
3.2.7 Other Local Events	9
4 Protocol Examples	10
4.1 Example 1	10
4.2 Example 2	10
4.3 Examples Sequence Diagram	11
5 Security	12
5.1 Security Considerations for Implementers	12
5.2 Index of Security Parameters	12
6 Appendix A: Product Behavior	13
7 Change Tracking	14
8 Index	15

1 Introduction

This document specifies the Remote Access Server Advertisement (RASADV) Protocol, by which **Remote Access Service (RAS) servers** advertise their presence within a local network, which allows network administrators to detect nonmalicious configuration and deployment of gateways providing external access to their network.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [\[MS-GLOS\]](#):

**ASCII
domain
domain name (3)
Remote Access Service (RAS) server**

The following terms are specific to this document:

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as described in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the documents, which are updated frequently. References to other documents include a publishing year when one is available.

A reference marked "(Archived)" means that the reference document was either retired and is no longer being maintained or was replaced with a new document that provides current implementation details. We archive our documents online [\[Windows Protocol\]](#).

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[IANAIMA] IANA, "Internet Multicast Addresses", March 2007, <http://www.iana.org/assignments/multicast-addresses>

[IANAPORT] IANA, "Port Numbers", November 2006, <http://www.iana.org/assignments/port-numbers>

[RFC768] Postel, J., "User Datagram Protocol", STD 6, RFC 768, August 1980, <http://www.ietf.org/rfc/rfc768.txt>

[RFC791] Postel, J., "Internet Protocol", STD 5, RFC 791, September 1981, <http://www.ietf.org/rfc/rfc791.txt>

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)".

1.3 Overview

The RASADV Protocol is a simple, unidirectional, multicast protocol. The sender is a RAS server, which puts its machine name in a message and periodically multicasts it on its local network.<1> The receiver listens for periodic messages and passes the message content (the sender's machine name) and the source address to an application.<2> A typical application using the listener side of this protocol displays the information to the user.

1.4 Relationship to Other Protocols

The RASADV Protocol depends on the **User Datagram Protocol (UDP)**, as specified in [\[RFC768\]](#), as a transport. No other protocols depend on the RASADV Protocol.

1.5 Prerequisites/Preconditions

1.6 Applicability Statement

The RASADV Protocol applies only to detecting intentional or accidental configuration and deployment of servers over time. It does not apply to detecting malicious configuration and deployment. It also does not apply if an administrator requires the ability to quickly detect such servers on demand, because it relies on a periodic broadcast mechanism.

1.7 Versioning and Capability Negotiation

The RASADV Protocol has no versioning or capability negotiation capabilities.

1.8 Vendor-Extensible Fields

This protocol has no vendor-extensible fields.

1.9 Standards Assignments

The RASADV Protocol uses the following standards assignments.

Parameter	Value	Reference
UDP port number	9753	[IANAPORT]
Internet Protocol version 4 (IPv4) multicast address	239.255.2.2	[IANAIMA]

2 Messages

The following sections specify how RASADV Protocol messages are transported and common RASADV Protocol data types.

2.1 Transport

All messages MUST be sent over UDP, as specified in [\[RFC768\]](#), with the UDP destination port set to 9753 and the IP destination address set to 239.255.2.2. The IP Time to Live (TTL), as specified in [\[RFC791\]](#) section 3.1, SHOULD be set to 15.

2.2 Message Syntax

The RASADV Protocol has a single message type.

2.2.1 Server Advertisement

The UDP message MUST be one of the following:

1. The **ASCII** string "Hostname=<hostname>", where <hostname> is replaced with the host name of the sender, followed by a line feed (0x0A) and a null character (0x00). This syntax MUST be used if the sender is not a member of a **domain**.
2. The ASCII string "Hostname=<hostname>\nDomain=<domainname>", where <hostname> is replaced with the host name of the sender, followed by a line feed (0x0A), and <domainname> is replaced with the **domain name** of the domain of which the machine is a member, followed by a line feed (0x0A) and a null character (0x00). This syntax MUST be used if the sender is a member of a domain.

3 Protocol Details

The following sections specify details of the RASADV Protocol, including abstract data models and message processing rules.

3.1 RAS Server Details

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

Host Name: The host name of the RAS server.

3.1.2 Timers

Advertisement Timer: A periodic timer used to multicast a server advertisement. It SHOULD have a period of 1 hour.

3.1.3 Initialization

When a RAS server starts, it MUST immediately send a server advertisement, as specified in section [2.2.1](#), and start its [Advertisement Timer](#).

3.1.4 Higher-Layer Triggered Events

This protocol has no higher-layer triggered events.

3.1.5 Message Processing Events and Sequencing Rules

The RAS server role has no message processing events or sequencing rules.

3.1.6 Timer Events

When the [Advertisement Timer](#) expires, the RAS server MUST send a server advertisement, as specified in section [2.2.1](#), and restart its Advertisement Timer.

3.1.7 Other Local Events

This protocol has no other local events.

3.2 Listener Details

3.2.1 Abstract Data Model

The listener role has no abstract data model.

3.2.2 Timers

The listener role has no timers.

3.2.3 Initialization

When a listener starts, it MUST start listening for UDP messages on port 9753 and join the IPv4 multicast group 239.255.2.2.

3.2.4 Higher-Layer Triggered Events

This protocol has no higher-layer triggered events.

3.2.5 Message Processing Events and Sequencing Rules

When a message arrives, the listener MUST deliver the message text and the source IP address to the application.

3.2.6 Timer Events

The listener role has no timer events.

3.2.7 Other Local Events

This protocol has no other local events.

4 Protocol Examples

Following are two examples where a RAS server broadcasts its advertisement on the local network.

4.1 Example 1

The network administrator starts a listener tool. The tool begins listening on the RASADV port and the multicast address. Later, the user configures a RAS server on the local network, on a computer named "myserver", which is not a member of a domain. When the RAS server starts, and every hour thereafter, it sends a [Server Advertisement](#) message containing the string "Hostname=myserver" followed by a line feed (0x0A) and a null character (0x00).

0	1	2	3	4	5	6	7	8	9	1	0	1	2	3	4	5	6	7	8	9	2	0	1	2	3	4	5	6	7	8	9	3	0	1
"Host"																																		
"name"																																		
"=mys"																																		
"erve"																																		
"r"										0x0A										0x00														

4.2 Example 2

The network administrator starts a listener tool. The tool begins listening on the RASADV port and the multicast address. Later, the user configures a RAS server on the local network, on a computer named "myserver", which is a member of the domain named "example.com". When the RAS server starts, and every hour thereafter, it sends a [Server Advertisement](#) message containing the string "Hostname=myserver.Domain=example.com" followed by a line feed (0x0A) and a null character (0x00).

0	1	2	3	4	5	6	7	8	9	1	0	1	2	3	4	5	6	7	8	9	2	0	1	2	3	4	5	6	7	8	9	3	0	1
"Host"																																		
"name"																																		
"=mys"																																		
"erve"																																		
"r.Do"																																		
"main"																																		
"=exa"																																		
"mple"																																		
".com"																																		
0x0A										0x00																								

4.3 Examples Sequence Diagram

The following sequence diagram illustrates the UDP messages corresponding to the examples mentioned previously.

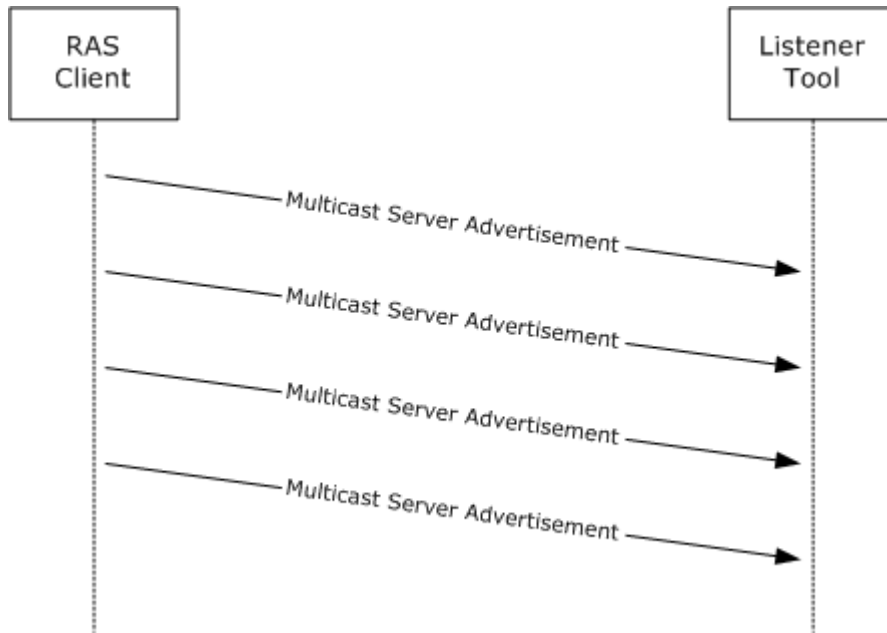


Figure 1: RAS server successfully multicasting its advertisement RAS client

5 Security

The following sections specify security considerations for implementers of the RASADV Protocol.

5.1 Security Considerations for Implementers

RASADV assumes that servers advertise themselves in order to be detected, and therefore does not provide any security or the ability to detect malicious servers.

5.2 Index of Security Parameters

This protocol has no security parameters.

6 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs:

- Windows 2000 operating system
- Windows XP operating system
- Windows Server 2003 operating system
- Windows Vista operating system
- Windows Server 2008 operating system
- Windows 7 operating system
- Windows Server 2008 R2 operating system
- Windows 8 operating system
- Windows Server 2012 operating system
- Windows 8.1 operating system
- Windows Server 2012 R2 operating system

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

[<1> Section 1.3](#): Windows 2000 Server, Windows Server 2003, Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, and Windows Server 2012 R2 support the sender role in Routing and Remote Access, which is an add-on that combines remote access support with network routing functionality.

[<2> Section 1.3](#): The listener is implemented in Windows by the command "netsh ras show activeservers", which displays the messages as they arrive.

7 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

8 Index

A

Abstract data model
[listener](#) 8
[server](#) 8
[Applicability](#) 6

C

[Change tracking](#) 14

D

Data model - abstract
[listener](#) 8
[server](#) 8

E

[Examples](#) 10

F

[Fields - vendor-extensible](#) 6

G

[Glossary](#) 5

H

Higher-layer triggered events
[listener](#) 9
[server](#) 8

I

[Implementer - security considerations](#) 12
[Index of security parameters](#) 12
[Informative references](#) 6
Initialization
[listener](#) 9
[server](#) 8
[Introduction](#) 5

L

Listener
[abstract data model](#) 8
[higher-layer triggered events](#) 9
[initialization](#) 9
[local events](#) 9
[message processing](#) 9
[sequencing rules](#) 9
[timer events](#) 9
[timers](#) 8
Local events
[listener](#) 9
[server](#) 8

M

Message processing
[listener](#) 9
[server](#) 8
Messages
[overview](#) 7
[syntax](#) 7
[transport](#) 7

N

[Normative references](#) 5

O

[Overview](#) 6

P

[Parameters - security index](#) 12
[Preconditions](#) 6
[Prerequisites](#) 6
[Product behavior](#) 13

R

References
[informative](#) 6
[normative](#) 5
[Relationship to other protocols](#) 6

S

Security
[implementer considerations](#) 12
[overview](#) 12
[parameter index](#) 12
Sequencing rules
[listener](#) 9
[server](#) 8
Server
[abstract data model](#) 8
[higher-layer triggered events](#) 8
[initialization](#) 8
[local events](#) 8
[message processing](#) 8
[sequencing rules](#) 8
[timer events](#) 8
[timers](#) 8
[Server advertisement](#) 7
[Standards assignments](#) 6
[Syntax](#) 7

T

Timer events
[listener](#) 9

[server](#) 8
Timers
[listener](#) 8
[server](#) 8
[Tracking changes](#) 14
[Transport](#) 7
Triggered events - higher-layer
[listener](#) 9
[server](#) 8

V

[Vendor-extensible fields](#) 6
[Versioning](#) 6