ARX® Secure Agent Installation Guide

810-0013-00



Publication Date

This manual was published on August 30, 2012.

Legal Notices

Copyright

Copyright 2004-8/30/12, F5 Networks, Inc. All rights reserved.

F5 Networks, Inc. (F5) believes the information it furnishes to be accurate and reliable. However, F5 assumes no responsibility for the use of this information, nor any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent, copyright, or other intellectual property right of F5 except as specifically described by applicable user licenses. F5 reserves the right to change specifications at any time without notice.

Trademarks

3DNS, Access Policy Manager, Acopia, Acopia Networks, Advanced Client Authentication, Advanced Routing, APM, Application Security Manager, ARX, AskF5, ASM, BIG-IP, Cloud Extender, CloudFucious, Clustered Multiprocessing, CMP, COHESION, Data Manager, DevCentral, DevCentral [DESIGN], DSI, DNS Express, DSC, Edge Client, Edge Gateway, Edge Portal, ELEVATE, EM, Enterprise Manager, ENGAGE, F5, F5 [DESIGN], F5 Management Pack, F5 Networks, F5 World, Fast Application Proxy, Fast Cache, FirePass, Global Traffic Manager, GTM, GUARDIAN, IBR, Intelligent Browser Referencing, Intelligent Compression, IPv6 Gateway, iApps, iControl, iHealth, iQuery, iRules, iRules OnDemand, iSession, IT agility. Your way., L7 Rate Shaping, LC, Link Controller, Local Traffic Manager, LTM, Message Security Module, MSM, Netcelera, OneConnect, OpenBloX, OpenBloX [DESIGN], Packet Velocity, Protocol Security Module, PSM, Real Traffic Policy Builder, Rosetta Diameter Gateway, ScaleN, Signaling Delivery Controller, SDC, SSL Acceleration, StrongBox, SuperVIP, SYN Check, TCP Express, TDR, TMOS, Traffic Management Operating System, TrafficShield, Traffix Diameter Load Balancer, Traffix Systems, Traffix Systems (DESIGN), Transparent Data Reduction, UNITY, VAULT, VIPRION, vCMP, virtual Clustered Multiprocessing, WA, WAN Optimization Manager, WANJet, WebAccelerator, WOM, and ZoneRunner, are trademarks or service marks of F5 Networks, Inc., in the U.S. and other countries, and may not be used without F5's express

All other product and company names herein may be trademarks of their respective owners.

Patents

This product may be protected by U.S. Patents 7,877,511; 7,958,347. This list is believed to be current as of August 30, 2012.

Export Regulation Notice

This product may include cryptographic software. Under the Export Administration Act, the United States government may consider it a criminal offense to export this product from the United States.

RF Interference Warning

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This unit generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Any modifications to this device, unless expressly approved by the manufacturer, can void the user's authority to operate this equipment under part 15 of the FCC rules.

Canadian Regulatory Compliance

This Class A digital apparatus complies with Canadian ICES-003.

Standards Compliance

This product conforms to the IEC, European Union, ANSI/UL and Canadian CSA standards applicable to Information Technology products at the time of manufacture.

Acknowledgments

This product includes software from several third-party vendors. Each vendor is listed below with the applicable copyright.

Copyright (c) 1990, 1993, 1994, 1995 The Regents of the University of California. All rights reserved.

Copyright 2000 by the Massachusetts Institute of Technology. All Rights Reserved.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

Copyright 1993 by OpenVision Technologies, Inc.

Copyright (C) 1998 by the FundsXpress, INC.

All rights reserved.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

Copyright (c) 1995-2001 International Business Machines Corporation and others

All rights reserved.

Copyright (c) 1990-2003 Sleepycat Software. All rights reserved.

Copyright (c) 1995, 1996 The President and Fellows of Harvard University. All rights reserved.

Copyright (c) 1998-2004 The OpenSSL Project. All rights reserved.

Unless otherwise noted, the companies, organizations, products, domain names, email addresses, logos, people, places, and events depicted in examples herein are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

Revision History

June 2004 - Rev A

July 2004 - Rev B

September 2004 - Rev C

October 2004 - Rev D - Software version 1.2

December 2004 - Rev E - updated License notice

March 2005 - Rev F - Software version 1.2.10

October 2005 - Rev G - Software version 2.1

April 2006 - Rev H - Software version 2.3 (platform-name change)

June 2006 - Rev J, updates for Software Release 2.4

October 2006 - Rev K, new links for multiple CLI users guides

October 2006 - Rev L, Software version 2.4.2

December 2007 - Rev M, change CLI examples

March 2008 - Rev N, update with F5 format

October 2008 - Rev P, re-brand the OS

June 2009 - Rev Q, clarifications for Windows-domain entries

November 2009 - Rev R, add "pre-win2k-name" option to the configuration; add upgrade instructions

March 2010 - Rev S, add pop-ups concerning AV setup and optional reboot

April 2010 - Rev T, remove upgrade procedure; must uninstall before new install

October 2010 - Rev U, updates for Software Release 5.02.000

June 2011 - Rev V, updates for Software Release 6.00.000

September 2011 - Rev W, trademark updates for Software Release 6.01.000

July 2012 - Rev W, minor updates for Software Release 6.02.000

October 2012 - Rev X, minor updates for Software Release 6.03.000



Table of Contents

1		
Introduction		
	Overview	1-3
	Software Components and Requirements	
	Windows Support	I-4
	Password Security	1-5
	Installation Overview	1 -5
	Audience for this Manual	1-6
	Document Conventions	1-6
	Related Documents	1-6
	Contacting Customer Service	1-7
2		
Installing Secure	e Agent	
	Installing the Software on a DC	2-3
	Uninstalling the Secure Agent	
	Viewing Log Information	2-9
3		
Configuring the	ARX	
	Before You Begin	3-3
	Modifying Switch Software	3-3
	Undoing Switch Settings	3-5
	Listing all Configured NTLM-Authentication Servers	3-5
	Showing Statistics for One NTLM-Authentication Server	3-6
	Sample Configuration	3-6
4		
Managing Secure	e Agent	
	Invoking the Secure-Agent Management Applet	4-3
	Resetting Statistics	
	Changing the Password or TCP Port	
	Stapping and Postarting the Socure Agent Sorvice	

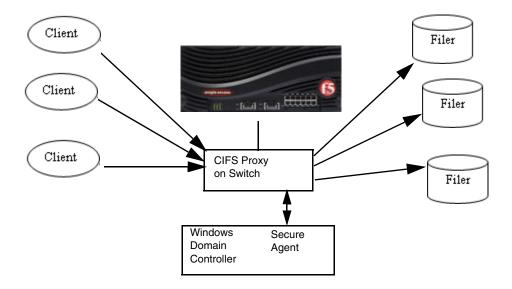


Introduction

- Overview
- Software Components and Requirements
- Audience for this Manual
- Document Conventions
- Related Documents
- Contacting Customer Service

Overview

This manual describes how to install and manage the ARX® Secure AgentTM software. This software provides NT LAN Manager (NTLM) and NTLMv2 authentication service on behalf of the ARX. The Secure Agent software is installed on a Microsoft Windows domain controller where security objects, such as usernames and passwords, are configured and maintained in a database. The Windows domain controller assists the CIFS proxy on the switch in verifying responses from front-end clients and responding to requests for back-end filer access. The following diagram shows a sample topology.



Software Components and Requirements

The Secure Agent software contains the following Windows-based runtime components:

- ARX Secure Agent The Secure-agent software runs as a Windows Service, displayed as the "Acopia Secure Agent." A setup wizard installs and starts the service. The service is configured with a startup type of "automatic," so that Windows restarts the Secure Agent on reboot.
- ARX Secure Agent Management applet The management user interface used to monitor statistics and view/modify Secure Agent settings. See <u>Chapter 4</u>, <u>Managing Secure Agent</u> for details.

Windows Support

Windows Domain Controllers (DCs)

ARX Secure Agent is supported on Windows Domain Controllers (DCs) running Microsoft Windows 2000, Windows 2003, or Windows 2008. Secure Agent assists the switch in authenticating client connections, maintaining a client's identity to back-end filers, and processing access control lists.

Secure Agent software is installed on the DCs associated with the back-end filers. For example, if Filer A is in Windows domain, DOMAINA, you install Secure Agent software on the DOMAINA domain controller. On the switch, you then configure an instance of Secure Agent for the Windows domain by specifying the IP address, password, and port (optional) where the Secure Agent software is installed.

The Windows DC requires a network connection on the server subnet or through a static route that uses a gateway on the server subnet.

See <u>Chapter 3</u> for information about configuring Secure Agent on the switch.

Multiple Domains and Trust Relationships

The ARX also supports Microsoft networks in multiple domains that share two-way trust relationships. You configure the "trust relationship" on the switch by defining multiple instances of Secure Agent (called NTLM-auth-servers) and assigning them to ARX namespaces. You install the Secure Agent software on each domain controller in the trust; the ARX uses these DCs to authenticate clients in each domain. For example, if a Windows network contains DOMAINA, DOMAINB, and DOMAINC, and they all share a two-way trust with each other, you install the Secure Agent software on each domain controller. On the switch, you configure a Secure Agent instance (NTLM-auth server) for each domain (DOMAINA,

DOMAINB, and DOMAINC), then assign it to the relevant namespace. See <u>Chapter 3, Configuring the ARX</u> for information about configuring Secure Agent on the switch.

Access Privilege

Secure Agent software installation/configuration requires Windows users with *Administrator* privilege.

Anti-Virus Application Settings

The Secure Agent software accesses the Domain Controller's (DC's) database, so anti-virus (AV) applications may prevent the Secure Agent software from functioning. Before you install the Secure Agent on a DC, consult AskF5 Solution SOL10026, which describes all necessary AV settings. That solution is posted on http://askf5.f5.com.

Password Security

The connection between the ARX and the Secure Agent is an authenticated TCP connection. Authentication is accomplished through a password shared by the switch and the Secure Agent software. All data sent on the connection is encrypted using a generated session key. Each TCP connection uses a different session key. Actual password or password hashes are never passed through the connection. No more information is passed over this connection than what is available in the clear in a normal CIFS session between two Windows computers.

Installation Overview

To install and configure ARX Secure Agent software:

- Install the Secure Agent software on each domain controller, as required in your network. See <u>Chapter 2</u>, <u>Installing Secure Agent</u>, for instructions.
- 2. On the ARX, configure a Secure Agent instance (NTLM-auth-server) for each Secure Agent installation/domain controller. See <u>Chapter 3</u>, <u>Configuring the ARX</u>, for instructions.
- 3. Assign a Secure Agent instance to the relevant ARX namespace. See <u>Chapter 3</u> for instructions.
- 4. Set up a CIFS service through the ARX CLI. See the <u>ARX® CLI</u> <u>Storage-Management Guide</u> for configuration information.

Audience for this Manual

This manual is intended for network administrators responsible for connecting the switch to front-end and back-end network and storage resources at the enterprise data center.

Document Conventions

This manual uses the following conventions, when applicable:

- courier text represents system output
- bold text represents user input
- italic text appears for variable input, emphasis, and book titles



Notes provide additional or helpful information about the subject text.

Related Documents

In addition to this guide, the following ARX documentation is also available:

- ARX®-VE Installation Guide
- ARX®-500 Hardware Installation Guide
- ARX®-2000 Hardware Installation Guide
- ARX®-4000 Hardware Installation Guide
- ARX® CLI Network-Management Guide
- ARX® CLI Storage-Management Guide
- ARX CLI Maintenance Guide
- ARX® CLI Reference
- Release Notes

Contacting Customer Service

You can use the following methods to contact F5 Networks Customer Service:

F5 Networks Online Knowledge Base Online repository of answers to frequently-asked questions.	http://support.f5.com
F5 Networks Services Support Online Online customer support request system	https://websupport.f5.com
Telephone	Follow this link for a list of Support numbers: http://www.f5.com/support/support-services/contact/



Installing Secure Agent

This chapter describes how to install the Secure Agent software using the installation setup wizard. It contains the following sections:

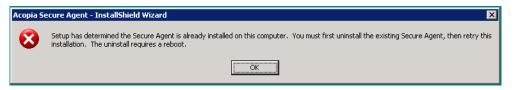
- Installing the Software on a DC
- Viewing Log Information

Installing the Software on a DC

If you have a former version of the Secure Agent running on this DC, you must uninstall it before you install this version. The Secure Agent uninstall process, described later in the chapter, requires a reboot.

To install a new Secure Agent application on your DC, follow these steps:

- 1. Download the proper Secure Agent software from https://downloads.f5.com/esd/productlines.jsp. Choose the 32-bit or the 64-bit software package, depending on your DC hardware.
- 2. Unzip the software package and double-click on the setup.exe file.
 - a) If an instance of Secure Agent is already installed on this DC, the following pop-up informs you that you must uninstall it first:



Instructions for uninstalling appear below. After the uninstall, restart this procedure.

b) If no instance of Secure Agent is currently installed, the following warning pops up:



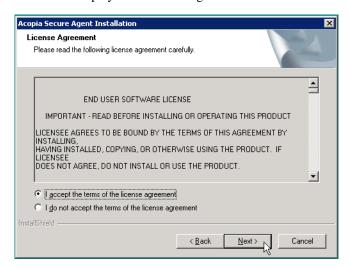
Follow the instructions in the pop-up, which refer you to AskF5 Solution SOL10026 on http://askf5.f5.com/.

3. After you allow the Secure Agent to run on the DC, click **Yes** to continue.

This invokes the following screen:



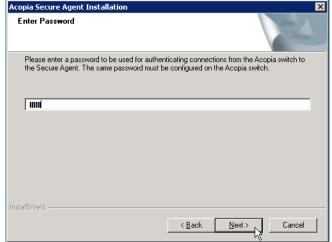
- 4. Click **Next** to proceed.
- 5. The wizard displays the License Agreement screen.



6. Click the radio button to accept the terms of the F5 license agreement, then click **Next**.

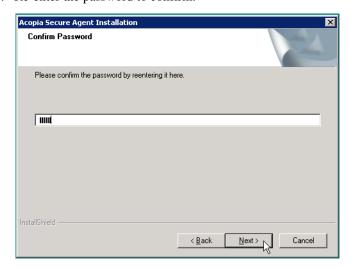
authenticate TCP connections. Then click Next. Acopia Secure Agent Installation Enter Password

7. Enter a password from 4-64 characters that the ARX will use to

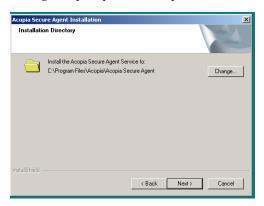


This same password must also be defined on the ARX, as described in Chapter 3, Configuring the ARX. For more information about Secure Agent and authentication, see Password Security, on page 1-5.

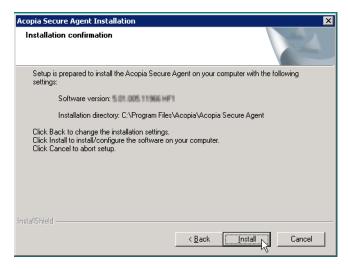
8. Re-enter the password to confirm.



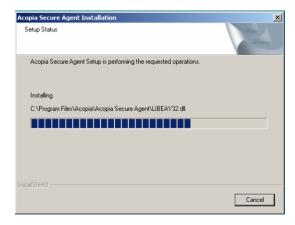
9. Specify where to install the software; accept the default or click **Change** to specify a different path.



- 10. Click Next.
- 11. Review the setup wizard settings, then click **Install** to proceed with the installation.

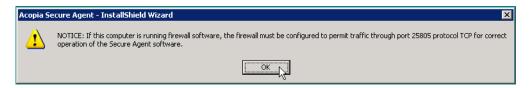


The wizard displays the installation status screen.



12. A pop-up warns you that the local firewall must allow TCP traffic over the Secure Agent port. You can change the Secure Agent port in its applet interface, described below.

Click **OK** to continue:



13. When installation is complete, the wizard displays the last screen.



14. Click **Finish** to exit the wizard.

Confirm that your firewall leaves open the TCP port required for Secure Agent access.

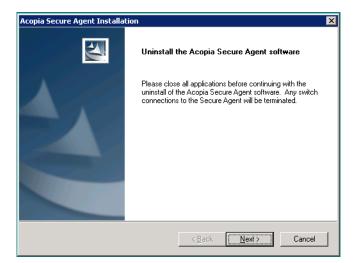
Uninstalling the Secure Agent

You must uninstall the Secure Agent before you install a new version.



The uninstall causes the DC to reboot.

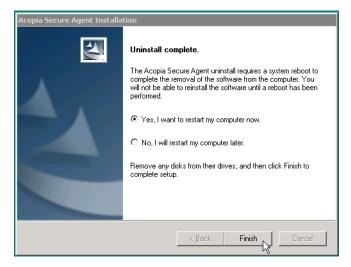
Use the standard Add/Remove Programs interface on your DC.
 This invokes the following pop-up. Close all other applications, then click Next to continue:



2. The following appears while the uninstall process removes the Secure Agent software:



Then a pop-up announces the completion of the uninstall process:



The pop-up informs you that a reboot is required to complete installation, and offers and option to reboot now.

3. Choose one of the reboot options and click **Finish**.

Viewing Log Information

Following Secure Agent software installation, you can view log information in %TEMP%\acopia-secure-agent-install.log (usually located in C:\Documents and Settings\Administrator\Local Settings\Temp).



Configuring the ARX

This chapter describes how to modify the ARX configuration to enable NTLM/NTLMv2 authentication through Secure Agent software installed on a Windows Domain Controller (DC). It contains the following sections:

- Before You Begin
- Modifying Switch Software

Before You Begin

Verify that all switch installation, network, namespace, and global server (CIFS) configuration tasks are complete.

Modifying Switch Software

Following Secure Agent software installation and before setting up a CIFS file service on the switch, you must modify the switch configuration to enable NTLM/NTLMv2 authentication through Secure Agent. Follow these steps to configure an NTLM authentication server for each instance of Secure Agent installed on a DC host system.

To configure the ARX to use NTLM Secure Agent:

1. From gbl mode in the CLI, enter the following:

```
ntlm-auth-server name
windows-domain domain [pre-win2k-name former-domain]
password
Password: password
Validate Password: password
port port-number
ip address ip-address
exit
```

name (1-128 characters) is an arbitrary name you choose for this Secure Agent (authentication server) instance. Typically, the name matches the hostname or domain name where this instance of Secure Agent is running.

domain (1-64 characters) is the name of the Windows domain where this instance of Secure Agent is installed. Use the fully-qualified-domain name (FQDN), such as "boston.ma.gov." Clients that authenticate with shorter variations (such as "boston") will also connect to this Secure Agent.

pre-win2k-domain *former-domain* (optional, 1-15 bytes) is useful if this domain has a pre-Windows-2000 alias with no relation to the FQDN, such as "CAPITOL." Specify the former domain name here. If you enter any lower-case letters, the CLI converts them to upper-case as needed.

password (4-64 characters) is the password used to authenticate connections between the switch and Secure Agent.

port-number (optional; the default is 25805) is the TCP port over which Secure Agent transactions will occur.

ip-address is the IP address of the DC host system running this instance of Secure Agent. The address must be on the server subnet or reachable through a static route.



If the DC is not on the server subnet, the static route to it must go through a router on the server subnet. This applies even if the DC is in a client subnet. To add a static route to the DC, see <u>Adding a Static Route</u>, on page 4-10 of the <u>ARX® CLI Network-Management Guide</u>.

For example, the following configuration supports two domains, "MEDARCH.ORG" and a legacy domain name, "NTNET."

```
bstnA(gbl)# ntlm-auth-server dc1
This will create a new NTLM Server.

Create NTLM Server 'dc1'? [yes/no] yes
bstnA(gbl-ntlm-auth-srv[dc1])# windows-domain MEDARCH.ORG pre-win2k-name NTNET
bstnA(gbl-ntlm-auth-srv[dc1])# ip address 192.168.25.109
bstnA(gbl-ntlm-auth-srv[dc1])# password
Password: mypa$$w0rd
Validate Password: mypa$$w0rd
bstnA(gbl-ntlm-auth-srv[dc1])# exit
bstnA(gbl)# ...
```

2. Assign the Secure Agent authentication server to a namespace. All CIFS services that export from the namespace use the namespace's Secure Agent server.

From gbl mode in the CLI, the following command enters gbl-ns mode:

namespace namespace-name

namespace-name is the namespace name.

Then, from gbl-ns mode, assign this Secure Agent to the namespace with the following command:

ntlm-auth-server name

name is the name of a Secure Agent authentication server (ntlm-auth-server) instance to associate with this namespace. You can assign one NTLM authentication server to multiple namespaces.

For example, this command sequence assigns the above server, "dc1," to the "medarcv" namespace:

```
bstnA(gbl)# namespace medarcv
```

```
This will create a new namespace.

Create namespace 'medarcv'? [yes/no] yes
bstnA(gbl-ns[medarcv])# ntlm-auth-server dc1
bstnA(gbl-ns[medarcv])# ...
```

3. Use the following command(s) to configure NTLM and/or NTLMv2 authentication for the namespace. You invoke these from gbl-ns mode, too:

cifs authentication ntlm

and/or

cifs authentication ntlmv2

For example, this command sequence configures both NTLM and NTLMv2 for the "medarcv" namespace:

bstnA(gbl)# namespace medarcv

This will create a new namespace.

```
Create namespace 'medarcv'? [yes/no] yes
bstnA(gbl-ns[medarcv])# cifs authentication ntlm
bstnA(gbl-ns[medarcv])# cifs authentication ntlmv2
```

% INFO: To use NTLMv2 with the Acopia Secure Agent, all agent instances must support NTLMv2 (requires agent version 5.1.0 or later).

bstnA(gbl-ns[medarcv])# ...

Undoing Switch Settings

To remove any of these settings, use the **no** forms of the commands. For example,

no ntlm-auth-server myserver

removes the Secure Agent authentication server named "myserver."

Where there is a default, the no command reverts the setting to the default. For example,

no port

changes the port number back to 28505.

Listing all Configured NTLM-Authentication Servers

From any CLI mode, use the show ntlm-auth-server command to list all configured Secure Agent authentication servers, along with their configuration parameters:

show ntlm-auth-server

For example:

bstnA(gbl)# show ntlm-auth-server

Name Domain Name	Server	Version Pre-Win2k		Status
dc1 MEDARCH.ORG	192.168.25.109	V5.01.000 NTNET	NTLM, NTLMv2	Reachable
dc2	192.168.25.102	V5.00.000	NTLM	Reachable

```
MEDARCH.ORG NTNET bstnA(gbl)# ...
```

Showing Statistics for One NTLM-Authentication Server

From any CLI mode, use the name of a server with the show ntlm-auth-server command to see its statistics:

show ntlm-auth-server name

where *name* (1-128 characters) is the name of the desired Secure Agent authentication server.

The output ends with a table of ARX namespaces that use the Secure Agent server

For example:

```
bstnA(gbl)# show ntlm-auth-server dc1
```

Sample Configuration

The following command sequence configures an NTLM authentication server named "dc1" (as above), shows it, and uses it in the "medarcv" namespace:

```
bstnA(gbl)# ntlm-auth-server dc1
This will create a new NTLM Server.
Create NTLM Server 'dc1'? [yes/no] yes
bstnA(gbl-ntlm-auth-srv[dc1])# windows-domain MEDARCH.ORG pre-win2k-name NTNET
bstnA(gbl-ntlm-auth-srv[dc1])# ip address 192.168.25.109
bstnA(gbl-ntlm-auth-srv[dc1])# password
Password: mypa$$w0rd
Validate Password: mypa$$w0rd
bstnA(gbl-ntlm-auth-srv[dc1])# exit
bstnA(gbl)# show ntlm-auth-server
Name
                                             Version
                                                       Capabilities Status
Domain Name
                                             Pre-Win2k Domain
______
                             192.168.25.109 V5.01.000 NTLM, NTLMv2 Reachable
dc1
MEDARCH.ORG
                                             NTNET
bstnA(gbl)# namespace medarcv
```

bstnA(gbl-ns[medarcv])# ntlm-auth-server dc1
bstnA(gbl-ns[medarcv])# ...



Managing Secure Agent

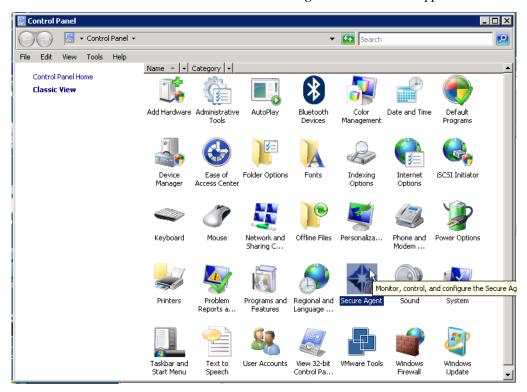
This chapter describes how to use the Secure Agent Management applet, which enables you to monitor real-time statistics and view and modify settings, such as the password and TCP port connection to the switch.

- Invoking the Secure-Agent Management Applet
- Resetting Statistics
- Changing the Password or TCP Port
- Stopping and Restarting the Secure Agent Service

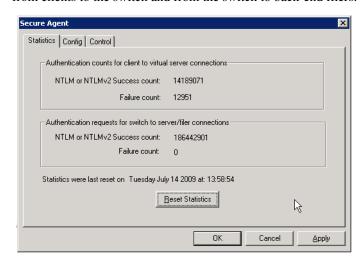
Invoking the Secure-Agent Management Applet

To start the management applet:

- 1. Select **Start->Settings->Control Panel** (on the Windows domain controller).
- 2. Double-click the **Secure Agent** icon to start the applet.

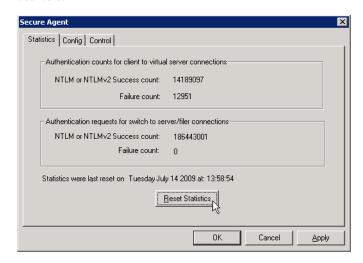


The system displays the Statistics tab screen. This screen shows real-time statistics information for authentication requests coming from clients to the switch and from the switch to back-end filers.



Resetting Statistics

To reset the counters, click **Reset Statistics**. As Secure Agent processes authentication requests, the management applet automatically updates the counters.



Changing the Password or TCP Port

Click the **Config** tab to change the password. You can also change the TCP port used to listen for incoming requests from the ARX. Confirm that the local firewall application allows communication over this port.

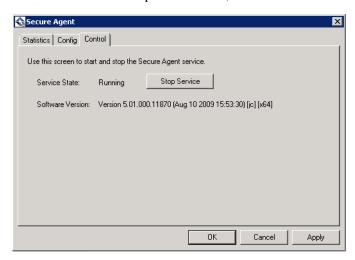




If you change the password, new connections to Secure Agent must use the new password. Current connections are not affected.

Stopping and Restarting the Secure Agent Service

To view the current version and operational state, click the **Control** tab.



1. Click the **Stop Service** button to stop or start Secure Agent service, as applicable.



The ARX cannot perform NTLM or NTLMv2 authentications while the Secure Agent is stopped.



I	n	d	eχ
		ч	\sim

A	W
Access privilege I-5 Administrator privilege I-5 Architecture (fig.) I-3	Windows support 1-4
Audience I-6 Audience for this manual I-6	
B Booting the switch 3-3	
C Configuring the switch 3-3	
D Document conventions I-6	
M Modify password 4-4 Modify TCP port number 4-4 Multiple domains 1-4	
P Password settings 4-4 Product overview I-3	
Related documents 1-6 Restarting Secure Agent 4-5 Running the boot wizard 3-3 Running the installation wizard 2-3 Running the management applet 4-3	
S Secure Agent components 1-4 Secure Agent Management applet 4-3 Setup wizard 2-3 Software components 1-4 Software version 4-5 Starting and stopping Secure Agent 4-5 Statistics 4-3 Switch bootup 1-5, 3-3	
T TCP port settings 4-4 Trusted domains 1-4	

Viewing statistics through Secure Agent 4-3