



SecureVantage

TECHNOLOGIES

ACS Noise Filter Guide

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OVERVIEW

In most cases it is often unnecessary or impractical to collect and store all security events. While the Audit Collection Service (ACS) natively collects all security events from a target system it includes a filtering mechanism which can be used to manage event insertion and storage to the SQL database. Filters can be implemented based on event ID or on the contents of the events themselves.

The Secure Vantage ACS Noise Filters Guide provides sample filter sets and guidance to optimize data collection which improves both online and offline storage capabilities plus reporting performance.

ACS Noise Filters are based on Microsoft recommended event filters defined in the Security Attack and Detection Planning Guide and best practices from Microsoft Security MVP, Randy Franklin Smith.

Guide Considerations:

- This is not an audit policy or data collection planning guide.
- Your corporate policy and/or regulatory requirements always dictate what you must collect.
- Currently the guide only covers Windows Server 2000 & 2003 events.
- This is a free community resource for administrators looking at ways to improve ACS collection performance and reduce overall load.
- This is a reference of what to consider filtering, why (based on MS) and how to go about it.
- Filter needs will vary based on audit policy, user activity and reporting requirements.
- Some filter examples include events that may not be relevant based on your audit policy.

Additional Resources

Security Attack Detection and Planning Guide: Appendix A Exclude Unnecessary Events

<http://www.microsoft.com/technet/security/guidance/auditingandmonitoring/securitymonitoring/default.aspx>

Ultimate Windows Security: <http://www.UltimateWindowsSecurity.com>

Secure Vantage Windows Security Auditing Reference List: Over 1300 Windows security events and settings with interactive links to Randy Franklin Smiths online security wiki.

<http://www.securevantage.com/Products/2007%20Solutions/Docs/Secure%20Vantage%20Windows%20Security%20Auditing%20Reference%20List.xls>

Secure Vantage Team Blog: <http://securevantage.spaces.live.com>

WINDOWS SERVER BASE FILTERS

The Windows Server Base Filters include lists of common events customers look to filter depending on overall auditing scope and reporting needs. Samples can be modified as needed to support your collection policy, environment or activity needs.

FS1001: Windows Server Essential Filter

The Windows Server Essentials filter provides a basic filter set that should be considered in any Audit Collection environment.

Event Filter Scope

Event	Description	Filter Rationale
551	User initiates logoff	Event 538 confirms logoff, use instead if you want to collect logoffs.
562	A handle to an object closed	Always records a success
573	Process generates nonsystem audit event with Authorization Application Programming Interface (AuthZ API)	MS defined Typical Behavior
577 & 578	Privilege service called, privileged object operation	Very high volume events that provide little information to act upon or understand in most cases.
594	A handle to an object was duplicated	MS defined Typical Behavior
595	Indirect access to an object was obtained	MS defined Typical Behavior
596	Backup of data protection master key	Occurs every 90 days automatically with default settings
597	Recovery of data protection master key	MS defined Typical Behavior
697	Password policy checking API called	MS defined Typical Behavior
768	Forest namespace collision	MS defined Not Security Related
769, 770, 771	Trusted forest information added, deleted or modified	Normal operations of inter-forest trusts. Do not confuse these with addition, deletion, or modification of the trust itself.
832 - 841	Various Active Directory replication issues	MS defined No Security Implications

Event Filter Syntax

```
--FS1001: Windows Server Essential Filters
SELECT *
FROM AdtsEvent WHERE NOT
(EventId=551
Or EventId=562
OR EventId=573
OR EventId=577
OR EventId=578
OR EventId=697
OR (EventId>=594 AND EventId<=597)
OR (EventId>=768 AND EventId<=771)
OR (EventId>=832 AND EventId<=841)
)
```

FS1002: Windows Server Reasonable Filters

The Windows Server Reasonable filters provide an extension to the essentials that is acceptable to most environments and reduces considerable noise.

Event Filter Scope

Event	Description	Filter Rationale
538	User logoff	This event only indicates the time a user initiates logoff or the when the system initiates logoff. This does not mean the user actually stopped using the system.
672	Kerberos AS Ticket request	If you collect logon events 528 and 540 from all computers, this event only adds data that a Kerberos TGT was granted. As there must still be a service ticket granted (event 673) for any access to occur, this event may be redundant. Please note this event can be associated with smart card logons if applicable
680	Account Logon	If you collect logon events 528 and 540 from all computers, this event only records validation of the account credentials. Separate logon events record what the user accessed, this event may be redundant.

Event Filter Syntax

```
--FS1002: Windows Server Reasonable Filters
SELECT *
FROM AdtsEvent WHERE NOT
(EventId=538
Or EventId=672
OR EventId=680
)
```

FS1003: Windows Server Rational Filters

The Windows Server Rational filters go beyond raw event id filtering to provide target filtering. These can be used when applicable.

Event Filter Scope

Event	Description	Filter Rationale
571	Client Context deleted by Authorization Manager.	Normal activity where Authorization Manager is active and in use
624	User Account Created where New Account Name ends with '\$'	A domain user has created or connected a new computer account to the domain. This may be normal activity is users have this right.
627	Change Password Attempt where User equals 'System' and Target Account Name equals 'TsInternetUser' and Caller User Name ends with '\$'	This is normal behavior of a computer that runs Terminal Services.

Event Filter Syntax

```
--FS1003: Windows Server Rational Filters
SELECT *
FROM AdtsEvent WHERE NOT
(EventId=571
Or (EventId=624 And TargetUser LIKE '%$%')
OR (EventId=627 AND HeaderUser='System' AND ClientUser like '%$%' And
TargetUser = 'TsInternetUser'))
```

FS1004: Windows Server Authentication Computer\$ Filter

The Windows Server Authentication Computer\$ filter is for common computer account logon traffic.

Event Filter Scope

Event	Description	Filter Rationale
538 & 540	Where Logon Type = 3 and User Name contains \$	Windows Computers generate many logon/logoff events on DCs as they frequently check for group policy updates and query other information in AD. Please note Filter Set 1002 already excludes event 538.
672 - 677	Where User Name contains \$	Windows Computers generate many Kerberos events as they frequently check for group policy updates and query other information in AD. Please note Filter Set 1002 already excludes event 672.

Event Filter Syntax

```
--FS1004: Windows Server Authentication Computer$ Filter
Select * from AdtsEvent where NOT (((EventId = 538 or EventId = 540)
AND (String01 = '3') AND HeaderUser like '%$%')) OR ((EventId > 671 and
EventId < 678) and ClientUser LIKE '%$%')
```

FS1005: Service Account Authentication Success Filter

The Service Account Authentication Success filter provides an example of how to filter specific user accounts or patterns within a user account name like admin or sys on logon. These are commonly used to filter service accounts that run on all systems frequently such as antivirus or backup programs. Please note this is for 'Success' activity only, all Logon failure activity should be collected.

Event Filter Scope

Event	Description	Filter Rationale
528 & 540	Where User Name contains \$ or =X	Some Service and System accounts generate excessive activity while doing normal approved activities. Filtering the these accounts can greatly reduce load when collecting successful logon events. Consider adding Event 538 and 680 if not already filtering those events.

Event Filter Syntax

```
--FS1005: Service Account Authentication Success Filter
Select * from AdtsEvent where NOT ((HEADERUSER LIKE '%ADM_%' OR
HEADERUSER LIKE '%SYS_%') AND(EventID = 528 OR EventID = 540 OR EventID
= 680))
```

MANAGING FILTERS

Managing filters is done through the adtAdmin command. The following information provides general guidelines for the command syntax and use with our noise filter templates.

Please Note: Filter complexity and length can impact WMI performance. The first place to manage event filters is at the Audit Policy level, then Objects (if auditing Directory Services or Object Access), then ACS.

Review Existing Filters

You can use the adtAdmin command to list the ACS Collection filters. The following information shows the general syntax and a sample of using the command. This can be used to check existing filters or validate new ones that are loaded. More information on the adtAdmin command can be found in the Operations Manager Help libraries on your Management Server.

Command Syntax

```
AdtAdmin.exe /getquery [/Collector:CollectorName]
```

Filtering Tips

Consider the following tips before applying ACS Noise Filters.

1. **Query Syntax is WQL** not SQL - some minor syntactical differences. In particular, advanced string manipulations are not supported in WQL (example: Right, Left, Substring, etc.).
Microsoft WQL Reference: [http://msdn2.microsoft.com/en-us/library/aa394606\(VS.85\).aspx](http://msdn2.microsoft.com/en-us/library/aa394606(VS.85).aspx)
2. **Default WQL Query** – The default query is “SELECT * FROM AdtsEvent” and allows all events to be inserted in the Collector database
3. **Query Length Max** - 100 tokens W2K3 SP1 or 500 tokens W2K3 SP2 (token is one set of objects, i.e. SELECT is 1 Token, SELECT * FROM is 3 Tokens)
4. **Use WHERE NOT statements** – The WQL Query tells the stream what to allow through to the Collector and into the ACS database. Using a NOT statement will allow all items through except those in the string.
5. **Query Length and Complexity** can impact ACS Performance
6. **Test the Query** – Test the query before applying it to production. Queries can become complex quite quickly, and it is difficult to foresee all impacts by simply looking at the query. Testing the noise filter before placing it in production will help alleviate unintentional data loss.

Applying New Filters

You can use the `adtAdmin` command to update the ACS Collection filters. The following information shows the general syntax and a sample of using the command with one of the filters described in this guide.

Command Syntax

```
AdtAdmin.exe /SetQuery [/Collector:CollectorName] /Query:QuerySyntax
```

Sample: Loading FS1001 Filter

```
adtadmin /setquery /collector:"Collector Name" /query:"SELECT *  
FROM AdtsEvent WHERE NOT(EventId=551 Or EventId=562 OR EventId=573 OR  
EventId=577 OR EventId=578 OR EventId=697 OR (EventId>=594 AND  
EventId<=597)OR (EventId>=768 AND EventId<=771) OR (EventId>=532 AND  
EventId<=841))"
```

Combining Different Filters

You can consolidate different filters in the document by combining the WQL syntax to a single query

Sample: Combining Filter FS1001 & FS1002

```
--FS1001: Windows Server Essential Filters  
SELECT * FROM AdtsEvent WHERE NOT (EventId=551 OR EventId=562 OR  
EventId=573 OR EventId=577 OR EventId=578 OR EventId=697 OR  
(EventId>=594 AND EventId<=597) OR (EventId>=768 AND EventId<=771) OR  
(EventId>=832 AND EventId<=841))  
  
--FS1002: Windows Server Reasonable Filters  
SELECT * FROM AdtsEvent WHERE NOT(EventId=538 OR EventId=672 OR  
EventId=680)  
  
--Combined Custom Filter  
SELECT * FROM AdtsEvent WHERE NOT (EventId=551 OR EventId=562 OR  
EventId=573 OR EventId=577 OR EventId=578 OR EventId=697 OR EventId=538  
OR EventId=672 OR EventId=680 OR (EventId>=594 AND EventId<=597) OR  
(EventId>=768 AND EventId<=771) OR (EventId>=832 AND EventId<=841))
```

Collection Load Analysis

Before and after you implement ACS filters it is important to understand the current event stream to validate your filters are working and also help identify other opportunities for performance tuning. Customers can leverage both reports and performance counters to assist with this analysis.

Secure Vantage provides an 'Event Load Analysis' report which identifies the count of unique events and primary objects plus a range of other analytics about your event stream. Customer can also leverage the canned event analysis reports from Microsoft and ACS performance counters.