Threat Modeling Report

Created on 11/13/2019 6:51:42 PM

Threat Model Name:

Owner:

Reviewer:

Contributors:

Description:

Assumptions:

External Dependencies:

Threat Model Summary:

Not Started	0
Not Applicable	9
Needs Investigation	0
Mitigation Implemented	46
Total	55
Total Migrated	0

Diagram: Diagram 1

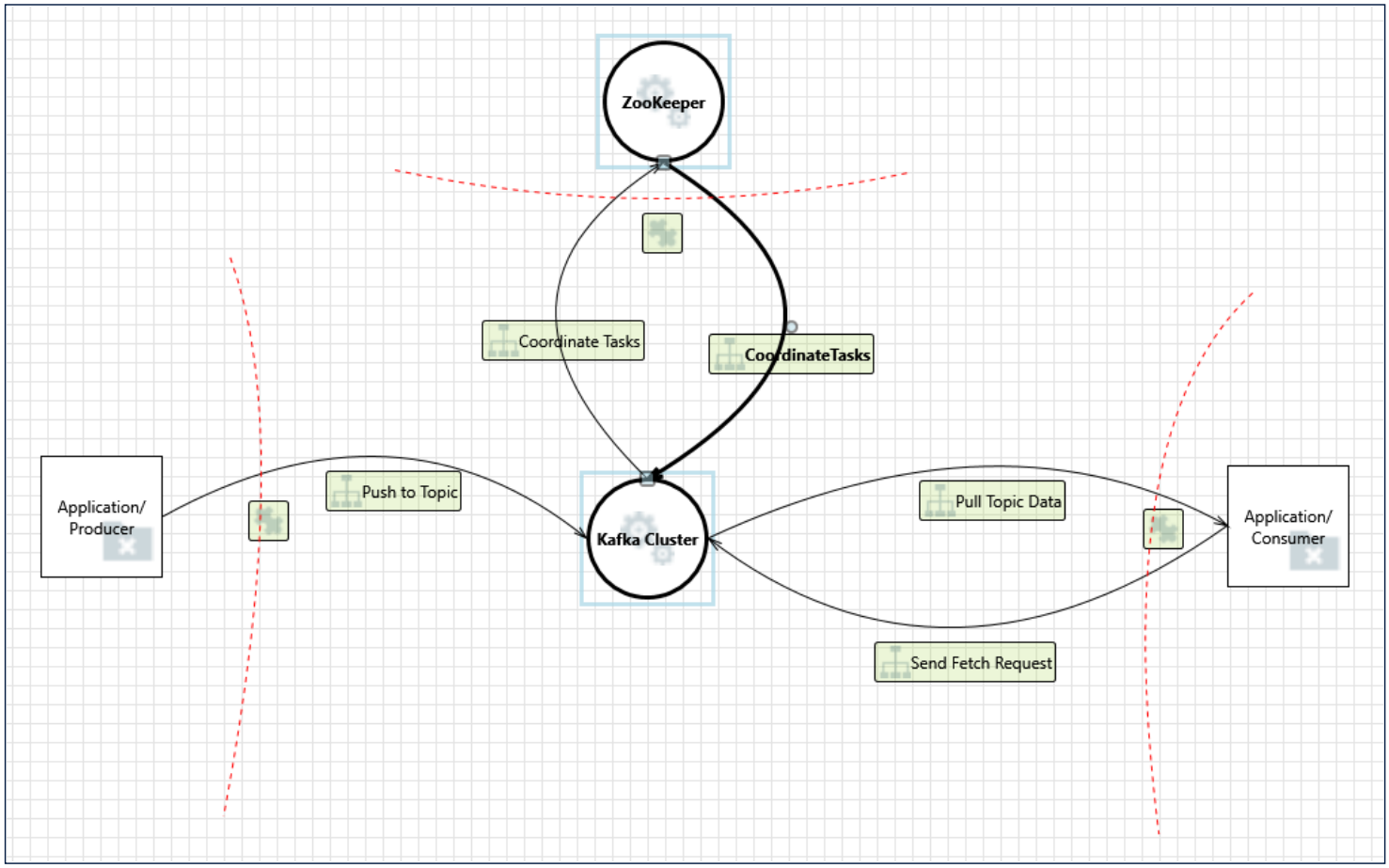


Diagram 1 Diagram Summary:

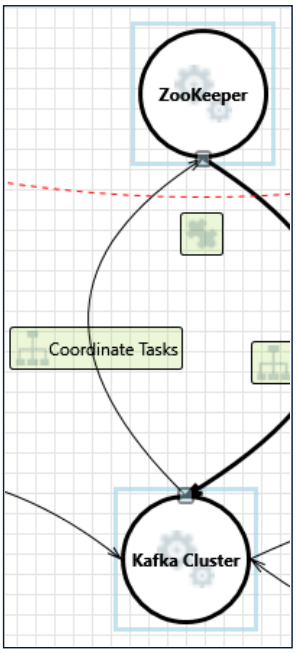
Not Started	0
Not Applicable	9
Needs Investigation	0
Mitigation Implemented	46
Total	55
Total Migrated	0

Threat(s) Not Associated With an Interaction:

1. External Entity Administrator Potentially Denies Receiving Data [State: Not Applicable] [Priority: High]

Category: Repudiation
Description: Administrator claims that it did not receive data from a process on the other side of the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.
Justification: <no mitigation provided>

Interaction: Coordinate Tasks



2. Data Flow Coordinate Tasks Is Potentially Interrupted [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service
Description: An external agent interrupts data flowing across a trust boundary in either direction.
Justification: ZooKeeper is not required for Kafka operations (after version .9), and a process crash or stop of ZooKeeper will limit capability, but not interrupt operations. Offsets are normally written to ZooKeeper, so that consumers can pull the data they need. For example, one consumer may have data 0-6, while another only has 0-3; the first consumer needs data 7+ and the second needs 4+. When ZooKeeper goes down, consumers will begin writing their offsets to the Broker. Limited capability comes in the form of administrators not having access to the topic trees; for example, administrators wouldn't be able to print a list of topics, but producers and consumers will continue to function until ZooKeeper comes back online.

3. Data Flow Sniffing [State: Not Applicable] [Priority: High]

Category: Information Disclosure
Description: Data flowing across Coordinate Tasks may be sniffed by an attacker. Depending on what type of data an attacker can read, it may be used to attack other parts of the system or simply be a disclosure of information leading to compliance violations. Consider encrypting the data flow.
Justification: <no mitigation provided>

4. Data Store Denies ZooKeeper Potentially Writing Data [State: Mitigation Implemented] [Priority: High]

Category: Repudiation
Description: ZooKeeper claims that it did not write data received from an entity on the other side of the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.
Justification: Yammer Metrics is used to monitor activity in the server.

5. The ZooKeeper Data Store Could Be Corrupted [State: Not Applicable] [Priority: High]

Category: Tampering
Description: Data flowing across Coordinate Tasks may be tampered with by an attacker. This may lead to corruption of ZooKeeper. Ensure the integrity of the data flow to the data store.
Justification: Kafka brokers can set SASL access control lists on zookeeper nodes to prevent modification of configurations.

6. Potential Process Crash or Stop for ZooKeeper [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service
Description: ZooKeeper is not required for Kafka operations (after version .9), and a process crash or stop of ZooKeeper will limit capability, but not interrupt operations. Offsets are normally written to ZooKeeper, so that consumers can pull the data they need. For example, one consumer may have data 0-6, while another only has 0-3; the first consumer needs data 7+ and the second needs 4+. When ZooKeeper goes down, consumers will begin writing their offsets to the Broker. Limited capability comes in the form of administrators not having access to the topic trees; for example, administrators wouldn't be able to print a list of topics, but producers and consumers will continue to function until ZooKeeper comes back online.
Justification: <no mitigation provided>

7. Data Flow Sniffing [State: Mitigation Implemented] [Priority: High]

Category: Information Disclosure
Description: Data flowing across Coordinate Tasks may be sniffed by an attacker. Depending on what type of data an attacker can read, it may be used to attack other parts of the system or simply be a disclosure of information leading to compliance violations. Consider encrypting the data flow.
Justification: Data transferred between brokers and and zookeeper server instances can be encrypted using SSL.

8. Potential Data Repudiation by ZooKeeper [State: Mitigation Implemented] [Priority: High]

Category: Repudiation
Description: ZooKeeper claims that it did not receive data from a source outside the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.
Justification: Yammer Metrics is used to monitor activity in the server.

9. Potential Lack of Input Validation for ZooKeeper [State: Mitigation Implemented] [Priority: High]

Category: Tampering
Description: Data flowing across Coordinate Tasks may be tampered with by an attacker. This may lead to a denial of service attack against ZooKeeper or an elevation of privilege attack against ZooKeeper or an information disclosure by ZooKeeper. Failure to verify that input is as expected is a root cause of a very large number of exploitable issues. Consider all paths and the way they handle data. Verify that all input is verified for correctness using an approved list input validation approach.
Justification: Kafka brokers can set SASL access control lists on zookeeper nodes to prevent modification of configurations.

10. Spoofing the ZooKeeper Process [State: Mitigation Implemented] [Priority: High]

Category: Spoofing
Description: ZooKeeper may be spoofed by an attacker and this may lead to information disclosure by Kafka Cluster. Consider using a standard authentication mechanism to identify the destination process.
Justification: Kafka deploys SSL key/certificate pair between brokers and zookeeper server instances.

11. Spoofing the Kafka Cluster Process [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Kafka Cluster may be spoofed by an attacker and this may lead to unauthorized access to ZooKeeper. Consider using a standard authentication mechanism to identify the source process.

Justification: Kafka deploys SSL key/certificate pair between brokers and zookeeper server instances.

12. Elevation Using Impersonation [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: ZooKeeper may be able to impersonate the context of Kafka Cluster in order to gain additional privilege.

Justification: Kafka provides authentication and authorization using ACLs

13. ZooKeeper May be Subject to Elevation of Privilege Using Remote Code Execution [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: Kafka Cluster may be able to remotely execute code for ZooKeeper.

Justification: Kafka provides authentication and authorization using ACLs

14. Elevation by Changing the Execution Flow in ZooKeeper [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: An attacker may pass data into ZooKeeper in order to change the flow of program execution within ZooKeeper to the attacker's choosing.

Justification: Kafka provides authentication and authorization using ACLs

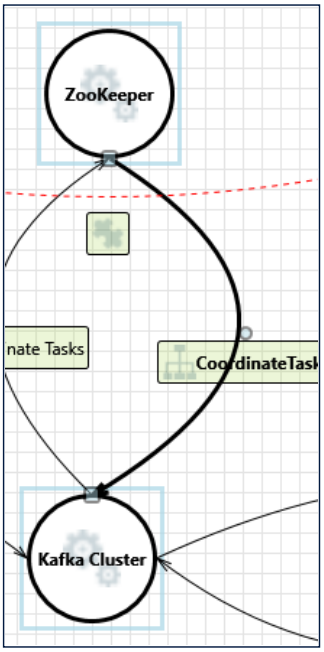
15. Cross Site Request Forgery [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: Cross-site request forgery (CSRF or XSRF) is a type of attack in which an attacker forces a user's browser to make a forged request to a vulnerable site by exploiting an existing trust relationship between the browser and the vulnerable web site. In a simple scenario, a user is logged in to web site A using a cookie as a credential. The other browses to web site B. Web site B returns a page with a hidden form that posts to web site A. Since the browser will carry the user's cookie to web site A, web site B now can take any action on web site A, for example, adding an admin to an account. The attack can be used to exploit any requests that the browser automatically authenticates, e.g. by session cookie, integrated authentication, IP whitelisting, ... The attack can be carried out in many ways such as by luring the victim to a site under control of the attacker, getting the user to click a link in a phishing email, or hacking a reputable web site that the victim will visit. The issue can only be resolved on the server side by requiring that all authenticated state-changing requests include an additional piece of secret payload (canary or CSRF token) which is known only to the legitimate web site and the browser and which is protected in transit through SSL/TLS. See the Forgery Protection property on the flow stencil for a list of mitigations.

Justification: Not a website, cross site request forgery N/A

Interaction: CoordinateTasks



16. Elevation by Changing the Execution Flow in Broker [State: Not Applicable] [Priority: High]

Category: Elevation Of Privilege
Description: An attacker may pass data into Kafka Cluster in order to change the flow of program execution within Kafka Cluster to the attacker's choosing.
Justification: Kafka provides authentication and authorization using ACLs

17. Broker May be Subject to Elevation of Privilege Using Remote Code Execution [State: Not Applicable] [Priority: High]

Category: Elevation Of Privilege
Description: ZooKeeper may be able to remotely execute code for Kafka Cluster.
Justification: Kafka provides authentication and authorization using ACLs

18. Potential Data Repudiation by Broker [State: Mitigation Implemented] [Priority: High]

Category: Repudiation
Description: Kafka Cluster claims that it did not receive data from a source outside the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.
Justification: Yammer Metrics is used to monitor activity in the server.

19. Weak Access Control for a Resource [State: Not Applicable] [Priority: High]

Category: Information Disclosure
Description: Improper data protection of ZooKeeper can allow an attacker to read information not intended for disclosure. Review authorization settings.
Justification: Brokers can maintain an SASL access control list on zookeeper nodes to prevent unauthorized accesss or modification.

20. Spoofing the ZooKeeper Process [State: Mitigation Implemented] [Priority: High]

Category: Spoofing
Description: ZooKeeper may be spoofed by an attacker and this may lead to unauthorized access to Kafka Cluster. Consider using a standard authentication mechanism to identify the source process.
Justification: Kafka deploys SSL key/certificate pair between brokers and zookeeper server instances.

21. Spoofing the Kafka Cluster Process [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Kafka Cluster may be spoofed by an attacker and this may lead to information disclosure by ZooKeeper. Consider using a standard authentication mechanism to identify the destination process.

Justification: Kafka deploys SSL key/certificate pair between brokers and zookeeper server instances.

22. Potential Lack of Input Validation for Kafka Cluster [State: Mitigation Implemented] [Priority: High]

Category: Tampering

Description: Data flowing across CoordinateTasks may be tampered with by an attacker. This may lead to a denial of service attack against Kafka Cluster or an elevation of privilege attack against Kafka Cluster or an information disclosure by Kafka Cluster. Failure to verify that input is as expected is a root cause of a very large number of exploitable issues. Consider all paths and the way they handle data. Verify that all input is verified for correctness using an approved list input validation approach.

Justification: Kafka brokers can set SASL access control lists on zookeeper nodes to prevent modification of configurations.

23. Potential Data Repudiation by Kafka Cluster [State: Mitigation Implemented] [Priority: High]

Category: Repudiation

Description: Kafka Cluster claims that it did not receive data from a source outside the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.

Justification: Yammer Metrics is used to monitor activity in the server.

24. Data Flow Sniffing [State: Mitigation Implemented] [Priority: High]

Category: Information Disclosure

Description: Data flowing across CoordinateTasks may be sniffed by an attacker. Depending on what type of data an attacker can read, it may be used to attack other parts of the system or simply be a disclosure of information leading to compliance violations. Consider encrypting the data flow.

Justification: Data transferred between brokers and and zookeeper server instances can be encrypted using SSL.

25. Potential Process Crash or Stop for Kafka Cluster [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service

Description: Kafka Cluster crashes, halts, stops or runs slowly; in all cases violating an availability metric.

Justification: ZooKeeper is not required for Kafka operations (after version .9), and a process crash or stop of ZooKeeper will limit capability, but not interrupt operations. Offsets are normally written to ZooKeeper, so that consumers can pull the data they need. For example, one consumer may have data 0-6, while another only has 0-3; the first consumer needs data 7+ and the second needs 4+. When ZooKeeper goes down, consumers will begin writing their offsets to the Broker. Limited capability comes in the form of administrators not having access to the topic trees; for example, administrators wouldn't be able to print a list of topics, but producers and consumers will continue to function until ZooKeeper comes back online.

26. Data Flow CoordinateTasks Is Potentially Interrupted [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service

Description: An external agent interrupts data flowing across a trust boundary in either direction.

Justification: ZooKeeper is not required for Kafka operations (after version .9), and a process crash or stop of ZooKeeper will limit capability, but not interrupt operations. Offsets are normally written to ZooKeeper, so that consumers can pull the data they need. For example, one consumer may have data 0-6, while another only has 0-3; the first consumer needs data 7+ and the second needs 4+. When ZooKeeper goes down, consumers will begin writing their offsets to the Broker. Limited capability comes in the form of administrators not having access to the topic trees; for example, administrators wouldn't be able to print a list of topics, but producers and consumers will continue to function until ZooKeeper comes back online.

27. Elevation Using Impersonation [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: Kafka Cluster may be able to impersonate the context of ZooKeeper in order to gain additional privilege.

Justification: Kafka provides authentication and authorization using ACLs

28. Kafka Cluster May be Subject to Elevation of Privilege Using Remote Code Execution [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: ZooKeeper may be able to remotely execute code for Kafka Cluster.

Justification: Kafka provides authentication and authorization using ACLs

29. Elevation by Changing the Execution Flow in Kafka Cluster [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: An attacker may pass data into Kafka Cluster in order to change the flow of program execution within Kafka Cluster to the attacker's choosing.

Justification: Kafka provides authentication and authorization using ACLs

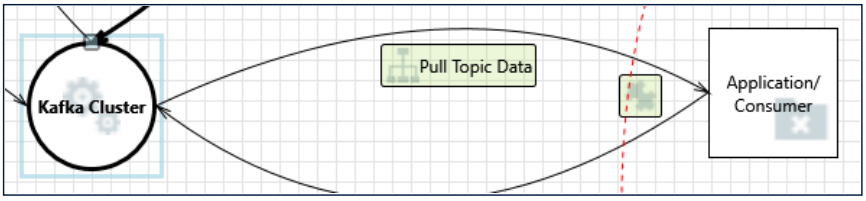
30. Cross Site Request Forgery [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: Cross-site request forgery (CSRF or XSRF) is a type of attack in which an attacker forces a user's browser to make a forged request to a vulnerable site by exploiting an existing trust relationship between the browser and the vulnerable web site. In a simple scenario, a user is logged in to web site A using a cookie as a credential. The other browses to web site B. Web site B returns a page with a hidden form that posts to web site A. Since the browser will carry the user's cookie to web site A, web site B now can take any action on web site A, for example, adding an admin to an account. The attack can be used to exploit any requests that the browser automatically authenticates, e.g. by session cookie, integrated authentication, IP whitelisting, ... The attack can be carried out in many ways such as by luring the victim to a site under control of the attacker, getting the user to click a link in a phishing email, or hacking a reputable web site that the victim will visit. The issue can only be resolved on the server side by requiring that all authenticated state-changing requests include an additional piece of secret payload (canary or CSRF token) which is known only to the legitimate web site and the browser and which is protected in transit through SSL/TLS. See the Forgery Protection property on the flow stencil for a list of mitigations.

Justification: Not a website, cross site request forgery N/A

Interaction: Pull Topic Data



31. Data Flow Send Topic Data Is Potentially Interrupted [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service

Description: An external agent interrupts data flowing across a trust boundary in either direction.

Justification: This interruption is mitigated by the use of replicas and various timeout configurations. If a broker is determined to be unreachable, then a replica will take its place as the leader, and continue normal operations.

32. External Entity Application/Consumer Potentially Denies Receiving Data [State: Mitigation Implemented] [Priority: High]

Category: Repudiation

Description: Application/Consumer claims that it did not receive data from a process on the other side of the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.

Justification: Kafka Metrics is used to monitor java client activity.

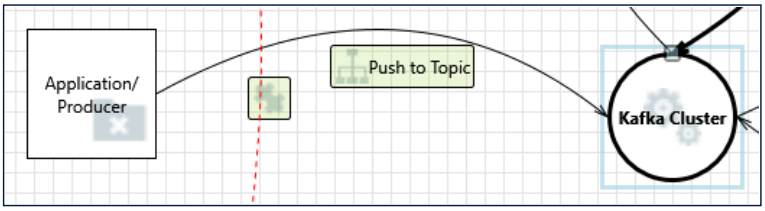
33. Spoofing of the Application/Consumer External Destination Entity [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Application/Consumer may be spoofed by an attacker and this may lead to data being sent to the attacker's target instead of Application/Consumer. Consider using a standard authentication mechanism to identify the external entity.

Justification: Kafka requires client authentication and sets appropriate permissions per client.

Interaction: Push to Topic



34. Potential Data Repudiation by Broker [State: Not Applicable] [Priority: High]

Category: Repudiation

Description: Kafka Cluster claims that it did not receive data from a source outside the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.

Justification: Yammer Metrics is used to monitor activity in the server.

35. Potential Lack of Input Validation for Broker [State: Mitigation Implemented] [Priority: High]

Category: Tampering

Description: Data flowing across Publish to Topic may be tampered with by an attacker. This may lead to a denial of service attack against Kafka Cluster or an elevation of privilege attack against Kafka Cluster or an information disclosure by Kafka Cluster. Failure to verify that input is as expected is a root cause of a very large number of exploitable issues. Consider all paths and the way they handle data. Verify that all input is verified for correctness using an approved list input validation approach.

Justification: Kafka access control lists prevent unauthrorized producers from publishing/modifying data for a topic.

36. Spoofing the Application/Producer External Entity [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Application/Producer may be spoofed by an attacker and this may lead to unauthorized access to Kafka Cluster. Consider using a standard authentication mechanism to identify the external entity.

Justification: Kafka requires client authentication and sets appropriate permissions per client.

37. Spoofing the Broker Process [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Kafka Cluster may be spoofed by an attacker and this may lead to information disclosure by Application/Producer. Consider using a standard authentication mechanism to identify the destination process.

Justification: Kafka deploys SSL key/certificate pair for each broker of a cluster.

38. Cross Site Request Forgery [State: Not Applicable] [Priority: High]

Category: Elevation Of Privilege

Description: Cross-site request forgery (CSRF or XSRF) is a type of attack in which an attacker forces a user's browser to make a forged request to a vulnerable site by exploiting an existing trust relationship between the browser and the vulnerable web site. In a simple scenario, a user is logged in to web site A using a cookie as a credential. The other browses to web site B. Web site B returns a page with a hidden form that posts to web site A. Since the browser will carry the user's cookie to web site A, web site B now can take any action on web site A, for example, adding an admin to an account. The attack can be used to exploit any requests that the browser automatically authenticates, e.g. by session cookie, integrated authentication, IP whitelisting, ... The attack can be carried out in many ways such as by luring the victim to a site under control of the attacker, getting the user to click a link in a phishing email, or hacking a reputable web site that the victim will visit. The issue can only be resolved on the server side by requiring that all authenticated state-changing requests include an additional piece of secret payload (canary or CSRF token) which is known only to the legitimate web site and the browser and which is protected in transit through SSL/TLS. See the Forgery Protection property on the flow stencil for a list of mitigations.

Justification: Not an external website

39. Elevation by Changing the Execution Flow in Broker [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: An attacker may pass data into Kafka Cluster in order to change the flow of program execution within Kafka Cluster to the attacker's choosing.

Justification: Kafka provides authentication and authorization using ACLs

40. Broker May be Subject to Elevation of Privilege Using Remote Code Execution [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege
Description: Application/Producer may be able to remotely execute code for Kafka Cluster.
Justification: Kafka provides authentication and authorization using ACLs

41. Elevation Using Impersonation [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege
Description: Kafka Cluster may be able to impersonate the context of Application/Producer in order to gain additional privilege.
Justification: Kafka provides authentication and authorization using ACLs - need proper permissions - encryption in transit in place

42. Data Flow Send Data Stream Is Potentially Interrupted [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service
Description: An external agent interrupts data flowing across a trust boundary in either direction.
Justification: This is mitigated by utilizing replicas, as well as through configuration. The configuration enable.idempotence=false allows for retries due to broker failure, and the retries configuration sets how many retries are allowed. If problems with stream interruption are a persistent threat, then interceptor.classes allows records to be intercepted (and possibly mutated) before they are published to the broker, allowing redirection to another broker or system if needed. Replicas allow producers and consumers to switch to another broker due to failure or connection interruption.

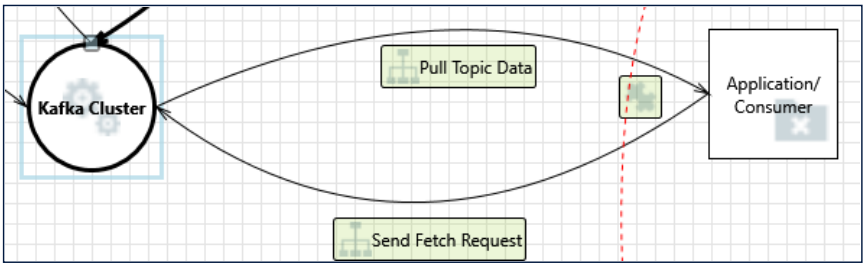
43. Potential Process Crash or Stop for Broker [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service
Description: Kafka Cluster crashes, halts, stops or runs slowly; in all cases violating an availability metric.
Justification: Broker failure is mitigated with the use of replicas and topic leaders managed by Zookeeper. There are several configurations that allow for fine grain control of timeouts, including transaction.timeout.ms and request.timeout.ms.

44. Data Flow Sniffing [State: Mitigation Implemented] [Priority: High]

Category: Information Disclosure
Description: Data flowing across Publish to Topic may be sniffed by an attacker. Depending on what type of data an attacker can read, it may be used to attack other parts of the system or simply be a disclosure of information leading to compliance violations. Consider encrypting the data flow.
Justification: Data transferred between brokers and clients can be encrypted using SSL.

Interaction: Send Fetch Request



45. Cross Site Request Forgery [State: Not Applicable] [Priority: High]

Category: Elevation Of Privilege
Description: Cross-site request forgery (CSRF or XSRF) is a type of attack in which an attacker forces a user's browser to make a forged request to a vulnerable site by exploiting an existing trust relationship between the browser and the vulnerable web site. In a simple scenario, a user is logged in to web site A using a cookie as a credential. The other browses to web site B. Web site B returns a page with a hidden form that posts to web site A. Since the browser will carry the user's cookie to web site A, web site B now can take any action on web site A, for example, adding an admin to an account. The attack can be used to exploit any requests that the browser automatically authenticates, e.g. by session cookie, integrated authentication, IP whitelisting, ... The attack can be carried out in many ways such as by luring the victim to a site under control of the attacker, getting the user to click a link in a phishing email, or hacking a reputable web site

that the victim will visit. The issue can only be resolved on the server side by requiring that all authenticated state-changing requests include an additional piece of secret payload (canary or CSRF token) which is known only to the legitimate web site and the browser and which is protected in transit through SSL/TLS. See the Forgery Protection property on the flow stencil for a list of mitigations.

Justification: Not a website, cross site request forgery N/A

46. Elevation by Changing the Execution Flow in Broker [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: An attacker may pass data into Kafka Cluster in order to change the flow of program execution within Kafka Cluster to the attacker's choosing.

Justification: Kafka provides authentication and authorization using ACLs

47. Broker May be Subject to Elevation of Privilege Using Remote Code Execution [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: Application/Consumer may be able to remotely execute code for Kafka Cluster.

Justification: Kafka provides authentication and authorization using ACLs

48. Elevation Using Impersonation [State: Mitigation Implemented] [Priority: High]

Category: Elevation Of Privilege

Description: Kafka Cluster may be able to impersonate the context of Application/Consumer in order to gain additional privilege.

Justification: Kafka provides authentication and authorization using ACLs - need proper permissions - encryption in transit in place

49. Data Flow Request Topic Data Is Potentially Interrupted [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service

Description: An external agent interrupts data flowing across a trust boundary in either direction.

Justification: This interruption is mitigated by the use of replicas and various timeout configurations. If a broker is determined to be unreachable, then a replica will take its place as the leader, and continue normal operations.

50. Potential Process Crash or Stop for Broker [State: Mitigation Implemented] [Priority: High]

Category: Denial Of Service

Description: Kafka Cluster crashes, halts, stops or runs slowly; in all cases violating an availability metric.

Justification: Broker failure is mitigated with the use of replicas and topic leaders managed by Zookeeper. There are several configurations that allow for fine grain control of timeouts, including transaction.timeout.ms and request.timeout.ms.

51. Data Flow Sniffing [State: Mitigation Implemented] [Priority: High]

Category: Information Disclosure

Description: Data flowing across Retireve Topic Data may be sniffed by an attacker. Depending on what type of data an attacker can read, it may be used to attack other parts of the system or simply be a disclosure of information leading to compliance violations. Consider encrypting the data flow.

Justification: Data transferred between brokers and clients can be encrypted using SSL.

52. Potential Data Repudiation by Broker [State: Mitigation Implemented] [Priority: High]

Category: Repudiation

Description: Kafka Cluster claims that it did not receive data from a source outside the trust boundary. Consider using logging or auditing to record the source, time, and summary of the received data.

Justification: Yammer Metrics is used to monitor activity in the server.

53. Potential Lack of Input Validation for Broker [State: Mitigation Implemented] [Priority: High]

Category: Tampering

Description: Data flowing across Retireve Topic Data may be tampered with by an attacker. This may lead to a denial of service attack against Kafka

Cluster or an elevation of privilege attack against Kafka Cluster or an information disclosure by Kafka Cluster. Failure to verify that input is as expected is a root cause of a very large number of exploitable issues. Consider all paths and the way they handle data. Verify that all input is verified for correctness using an approved list input validation approach.

Justification: Kafka access control lists prevent unauthrorized brokers from modifying data for a topic.

54. Spoofing the Application/Consumer External Entity [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Application/Consumer may be spoofed by an attacker and this may lead to unauthorized access to Kafka Cluster. Consider using a standard authentication mechanism to identify the external entity.

Justification: Kafka requires client authentication and sets appropriate permissions per client.

55. Spoofing the Broker Process [State: Mitigation Implemented] [Priority: High]

Category: Spoofing

Description: Kafka Cluster may be spoofed by an attacker and this may lead to information disclosure by Application/Consumer. Consider using a standard authentication mechanism to identify the destination process.

Justification: Kafka deploys SSL key/certificate pair for each broker of a cluster.