

# Detections

Published: 2022-08-16

The ExtraHop system applies machine learning techniques and rule-based monitoring to your wire data to identify unusual behaviors and potential risks to the security and performance of your network.

## Before you begin

Users must be granted [privileges](#) to view detections.

When anomalous behavior is identified, the ExtraHop system generates a detection and displays the available data and options. Controls on the Detections page help you [group](#), [filter](#), and [sort](#) your view of detections, so you can quickly triage issues with critical systems first.

Detections can help you defend your network in the following ways:

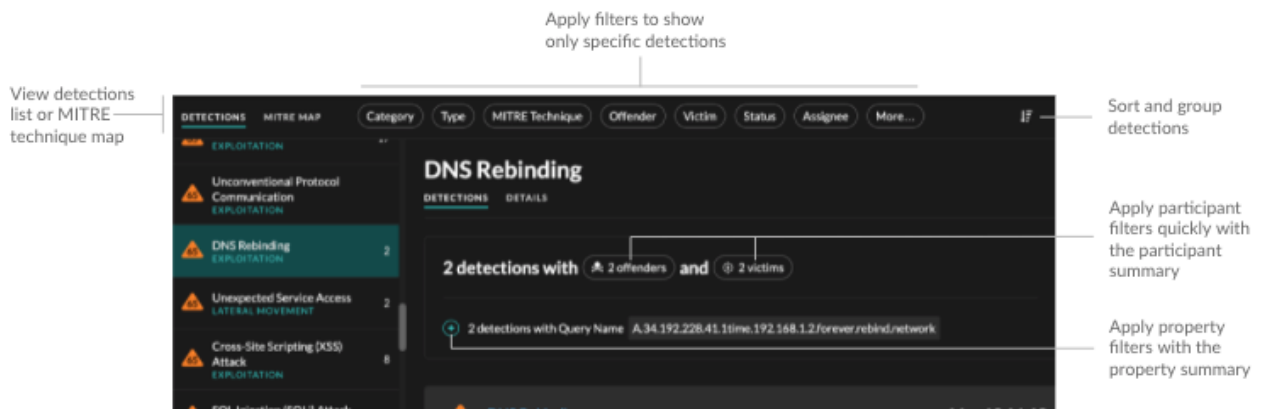
- Collect high-quality, actionable data to find the root causes behind network issues.
- Find unknown issues with performance, security, or infrastructure.
- Identify malicious behavior that is associated with different attack categories or MITRE techniques.
- View related detections or create your own [investigation](#) to group detections and track potential attack campaigns.
- Flag suspicious IP addresses, hostnames, and URIs identified by threat intelligence.
- Highlight security hardening best practices.

Learn more about [optimizing detections](#).

**Important:** Although detections can inform you about security risks and performance issues, detections do not replace decision-making or expertise about your network. Always review [security](#) and [performance](#) detections to determine the root cause of unusual behavior and when to take action.

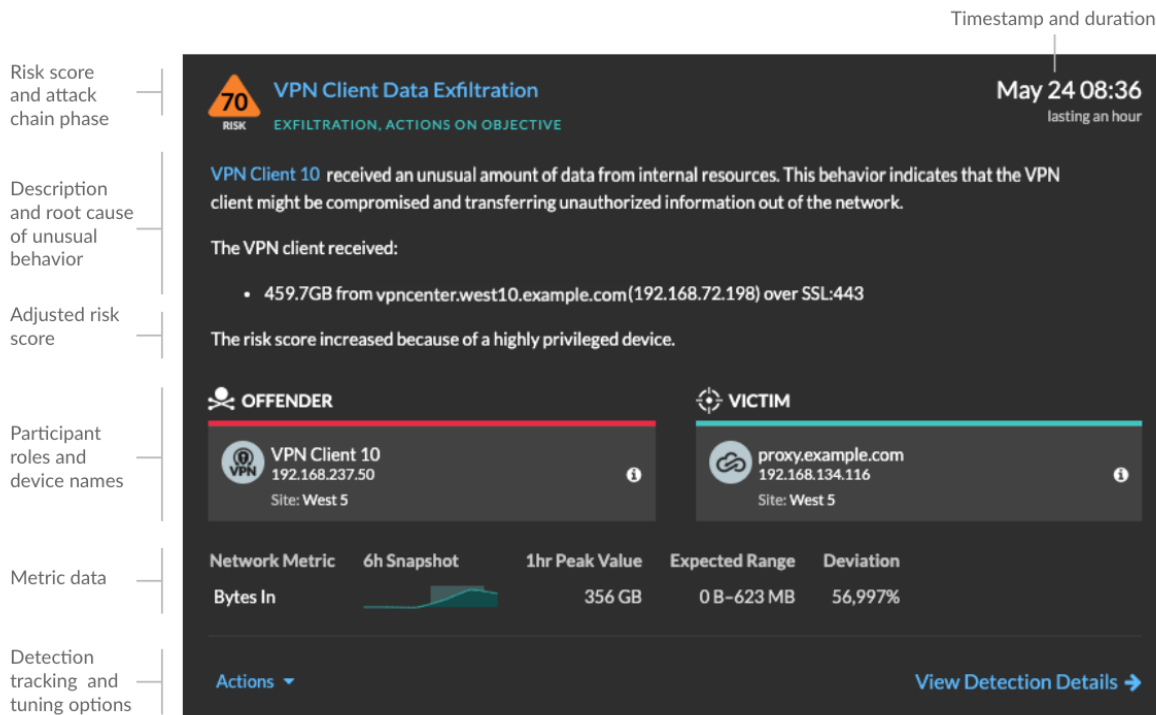
## Navigating detections

Detection cards appear in a sortable list that can be further grouped and filtered by multiple criteria on the main Detections page. Click any detection card to navigate to the detection detail page.



## Detection cards

Each detection card identifies the cause of the detection, the detection category, when the detection occurred, and the victim and offender participants. Security detections include a risk score.



## Risk score

Measures the [likelihood, complexity, and business impact](#) of a security detection. This score provides an estimate based on factors about the frequency and availability of certain attack vectors against the necessary skill levels of a potential hacker and the consequences of a successful attack. The icon is color coded by severity as red (80-99), orange (31-79), or yellow (1-30).

## Participants

Identifies each participant (offender and victim) involved in the detection by hostname or IP address. Click on a participant to view basic details and access links. Internal endpoints display a link to the Device Overview page; external endpoints display the geolocation of the IP address and links to the ARIN Whois website and IP address detail page. If a participant has passed through another device like a load balancer or gateway, both the participant and the device are displayed on the participant card, but only the origin endpoint is considered a participant.



**Note:** SSL/TLS decryption is required to display origin endpoints if HTTPS is enabled. [Learn more about SSL/TLS decryption](#).

When grouping the Detection page by **Type**, a participant summary appears under the detection type that breaks down detections by offender and victim and enables you to quickly [apply participant filters](#).

When grouping the Detection page by **Sources**, internal device role icons are highlighted red if the device was an offender in a detection and teal if the device was a victim. You can click **Details** under the source name to view a summary of detections where that source was a participant. These device details are displayed next to the detection card on wide screens (1900 pixels or greater).

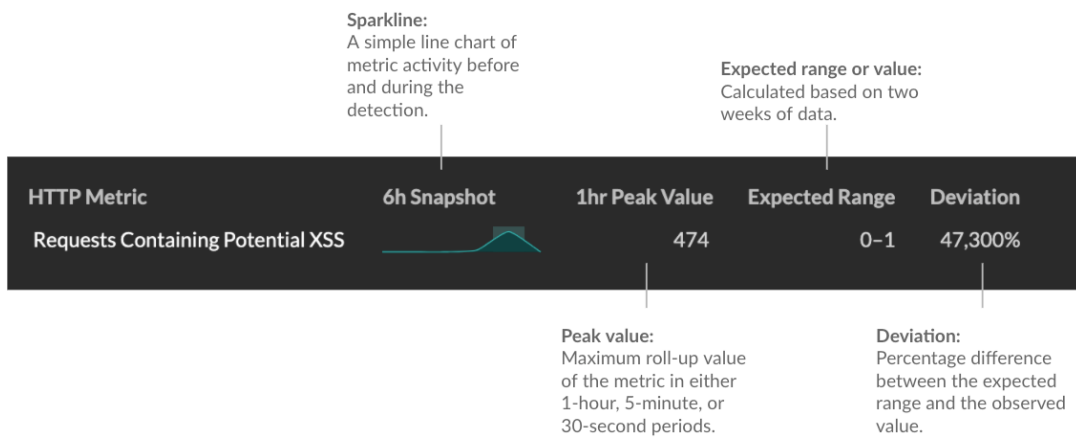
## Duration

Identifies how long the unusual behavior was detected or displays ONGOING if the behavior is currently occurring.

Detections that highlight security hardening best practices display two dates: the first time and the most recent time that the violation was identified.

## Metric data

Identifies additional metric data when the unusual behavior is associated with a specific metric or key. If metric data is unavailable for the detection, the type of anomalous protocol activity appears.



## Detection management

You can [track](#) or [tune](#) the detection from the Actions dropdown list, or click **View Detection Details** to navigate to the detection detail page.

## Detection detail page

Most of the data that you need to understand and validate a detection appears on the detection detail page: tables of relevant metric data, record transactions, and links to raw packets.

The detection card information is followed by all available sections for the detection. These sections vary depending on the type of the detection.

## Track Detection

You can [track](#) or [tune](#) the detection, or click **Add to an Investigation** to include the detection in a new or existing [investigation](#).

If you have configured a [CrowdStrike integration](#) on your ExtraHop system, you can [initiate containment of CrowdStrike devices](#) that are participants in the detection. (Reveal(x) 360 only.)

## Decryption badge

When the ExtraHop system identifies suspicious behavior or a potential attack in decrypted traffic records, the detection detail page displays a decryption badge to the right of the detection name.

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RISK

EXPLOITATION

CVE-2021-34527 Windows Print Spooler Exploit Attempt

Dec 8 12:17 • lasting a few seconds

dc05-west received a malicious request that matches an attempt to exploit PrintNightmare, a privilege escalation and remote code execution (RCE) vulnerability in the Windows Print Spooler service. Refer to this [Microsoft Security Update Guide](#) for patch and mitigation information

OFFENDER

externalVM  
192.168.226.68

VICTIM

dc05-west  
192.168.77.175

DETECTED WITH DECRYPTION

Track Detection

Status

No Status

Assignee

Unassigned

Actions

[Add to an Investigation](#)
[Tune Detection](#)

Learn more about [SSL/TLS decryption](#) and [decrypting traffic with a Windows domain controller](#).

### Detection properties

Provides a list of properties that are relevant to the detection. For example, detection properties can include a query, URI, or hacking tool that is central to the detection.

OFFENDER

dns35.west.example.com  
192.168.46.64  
Site: West1

VICTIM

workstation.example.com  
192.168.114.49  
Site: West1

Query Name: A.16.88.248.207.extime.192.168.187.25.east.network  
Client Port: 43673  
Server Port: 53

Related Detections

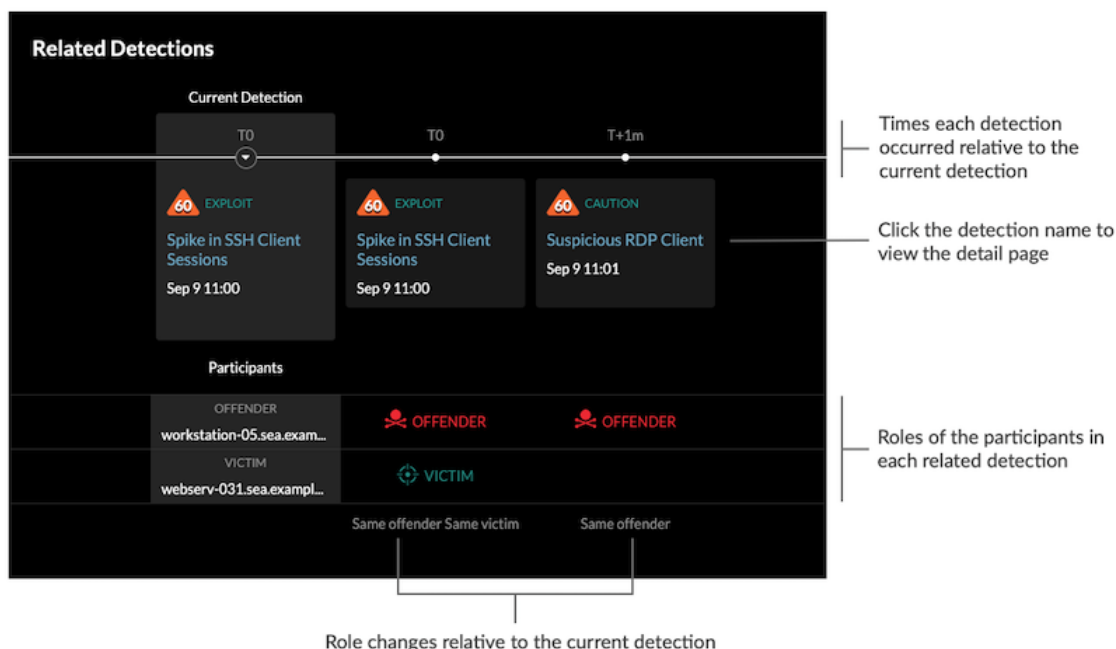
T-2h

T-2h

Current Detection

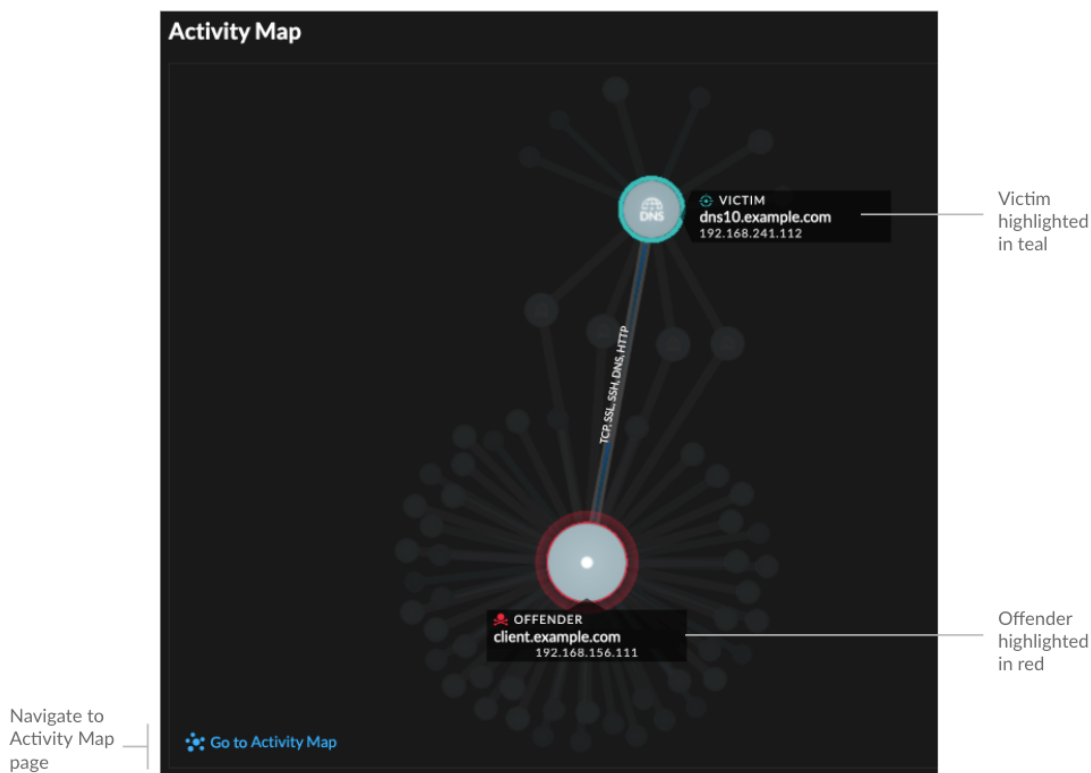
### Related detections

Provides a timeline of detections related to the current detection that can help you identify a larger attack campaign. Related detections include the participant role, duration, timestamp, and any role changes if the offender in one detection becomes the victim in a different detection. Click any related detection in the timeline to view the details page for that detection.



## Activity map

Provides an [activity map](#) that highlights the participants involved in the detection. The activity map displays east-west traffic of the protocol associated with the detection to help you assess the scope of malicious activity. Click the victim or offender to access a drop-down menu with links to the Device Overview page and other detections where the device is a participant.



## Compare behaviors

Provides a chart that displays the activity of the offender next to the activity of similar devices over the time period when the detection occurred. The chart appears for detections related to unconventional activity by a device, and highlights unexpected behavior by displaying it next to the behavior of devices on the network with similar properties.



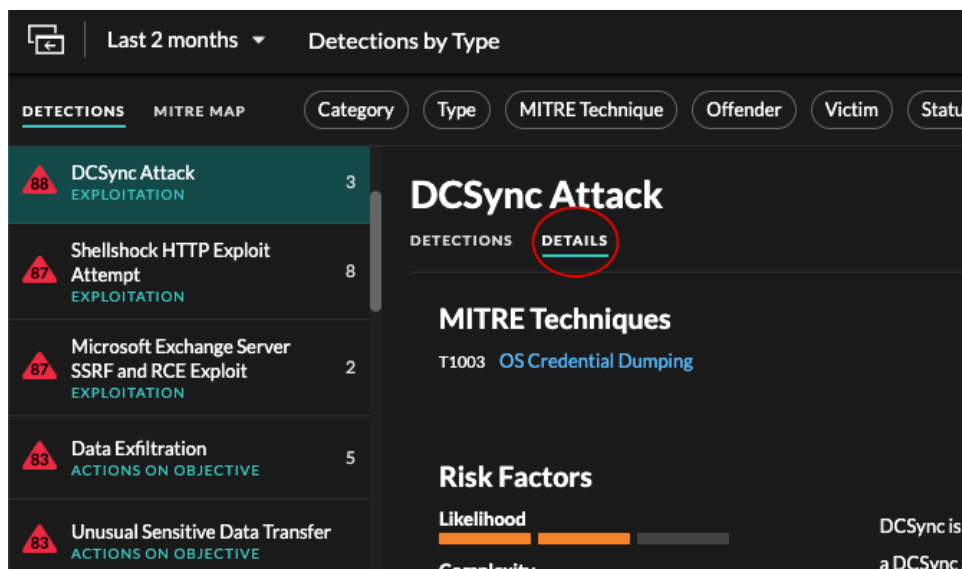
## Detection data and links

Provides all available data about the detection, such as metrics from the targeted servers and clients and their [record](#) transactions. Click the icon to view the raw [packets](#) associated with the detection.

## Detection details

Provides an expanded description of the detection, such as associated MITRE techniques, risk factors, attack backgrounds and diagrams, mitigation options, and reference links to security organizations such as MITRE.

These details are displayed next to the detection card on wide screens (1900 pixels or greater), or you can access them by clicking **Details** under the detection title when grouping the Detection page by **Types**.



**Tip:** You can [share detection](#) detail pages with other ExtraHop users.

## Viewing, filtering, and sorting detections

There are three types of controls at the top of the page that modify your Detections page: view, filters, and sort.

### Viewing detections

By default, detections on the Detections page appear in a list that is grouped by detection type and sorted by highest risk.

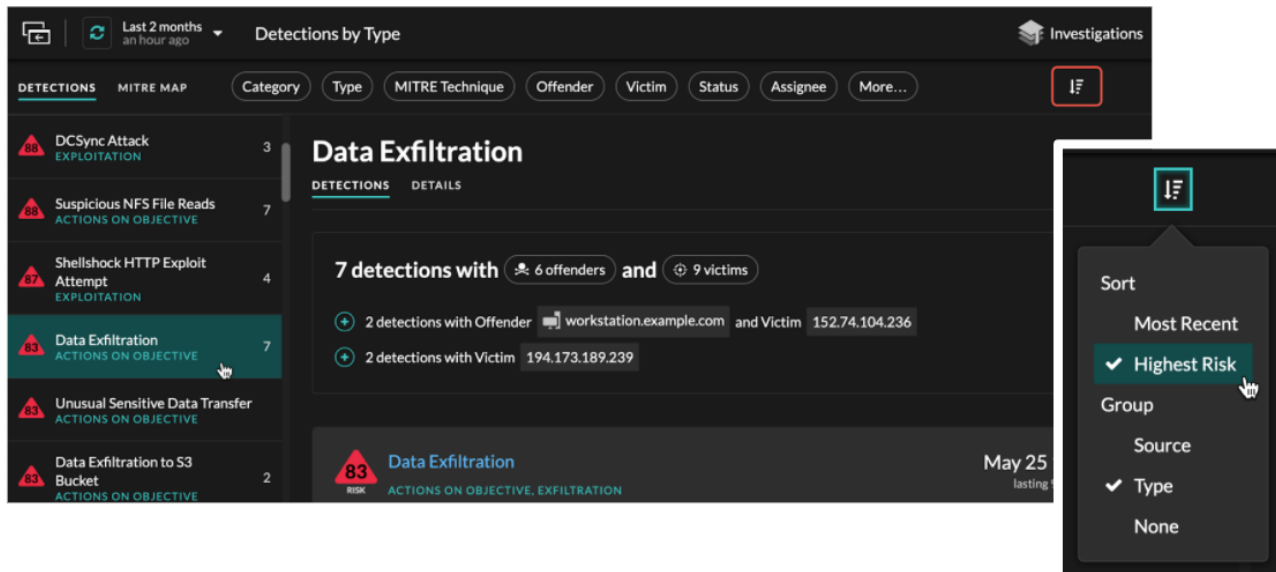
Click **MITRE Map** if you want to display your detections by attack technique. Each tile in the matrix represents an attack technique from the MITRE ATT&CK® Matrix for Enterprise. If a tile is highlighted, the detection associated with that technique occurred during the selected time interval. Click any tile to see detections that match that technique.

The screenshot displays two views of the ExtraHop Detections interface. The top view shows the 'Data Exfiltration' detection type selected in the left sidebar. The main panel shows a list of detections with filters for 6 offenders and 9 victims. The bottom view shows the 'MITRE Map' view, which is a matrix of attack techniques categorized by MITRE ATT&CK framework.

| Initial Access  | Execution  | Persistence                                | Privilege Escalation                          | Defense Evasion                           | Credential Access                         | Discovery  | Lateral Movement  | Collection                              | Exfiltration                                       | Command & Control  |
|---|--|--|---|---|---|--|---|---|--|--|
| Drive-by Compromise<br>T1189<br>688 Detections              | Command and Scripting Interpreter<br>T1059                 | Account Manipulation<br>T1098              | Boot or Logon Autostart Execution<br>T1547    | Exploitation for Defense Evasion<br>T1211 | Brute Force<br>T1110<br>78 Detections     | Account Discovery<br>T1087<br>12 Detections        | Exploitation of Remote Services<br>T1210<br>25 Detections | Archive Collected Data<br>T1560         | Automated Exfiltration<br>T1020<br>8 Detections    | Application Layer Protocol Manipulation<br>T1071<br>116 Detections |
| Exploit Public-Facing Application<br>T1190<br>21 Detections | Exploitation for Client Execution<br>T1203<br>8 Detections | Boot or Logon Autostart Execution<br>T1547 | Boot or Logon Initialization Scripts<br>T1037 | Hijack Execution Flow<br>T1574            | Credentials from Password Stores<br>T1555 | Cloud Service Discovery<br>T1526<br>164 Detections | Lateral Tool Transfer<br>T1570                            | Data from Cloud Storage Object<br>T1530 | Data Transfer Size Limits<br>T1030<br>8 Detections | Data Encoding<br>T1132<br>4 Detections                             |
| External  | Inter-Process Communication                                | Boot or Logon Initialization               | Construct or Configure                        | Impair Defenses                           | Exploitation for Credential Access        | Domain Trust Discovery                             | Remote Services   | Data from Information                   | Exfiltration Over                                  | Data Obfuscation   |

### Grouping detections

You can group detections by **Types** of detection (such as Spike in SSH Sessions) or by detection **Sources** (offender or victim hostname or IP address).



When grouping the Detection page by **Type**, the participant summary appears under the detection type. You can click filters in the summary title and select a single participant, or apply multiple [participant filters](#) by clicking the plus (+) icon.



For certain detections, a property summary is available when grouping by **Type**. Click a property filter to show other detections that match the property.

## Timeline

When you group by **None** on the Detections page, a timeline chart displays the total number of detections identified within the selected time interval. Each horizontal bar in the chart represents the duration of a single detection and is color-coded according to the risk score.

- Click and drag to highlight an area on the chart to zoom in on a specific time range. Detections are listed for the new time interval.
- Hover over a bar to view the detection title.
- Click a bar to navigate directly to the detection detail page.

## Security


Most network attacks tend to follow familiar patterns or phases. All security detections are assigned an attack category that corresponds with one of these phases.

When you group by **None** on the Detections page, a flow chart displays the number of detections that are associated with each attack category. Categories are assembled into an attack chain that characterizes the progression of steps an attacker takes to ultimately achieve their objective, such as stealing sensitive data.



## Sorting detections

You can sort detections by either the highest risk score or most recent occurrence.

When sorted by **Most Recent**, detections with the most recent end time appear first. If two detections are still ongoing, the detection with the most recent update time appears first. Click the sort icon  to the far right to select an option.

## Filtering detections

You can filter the Detections page to display only the detections that match your specified criteria. For example, you might only be interested in exfiltration detections that occur over HTTP, or detections associated with participants that are important servers.

### Category

You can filter by Attack or Operations detections, or you can select a more specific category to further refine your view of the Detections page. When you click the Category filter, categories listed under the **All Attack Categories** and **All Operations Categories** options are sorted by the number of detections in the category.

Attack detections include the following categories that match phases of the attack chain.

#### Command & Control

An external server that has established and maintained connection to a compromised device on your network. C&C servers can send malware, commands, and payloads to support the attack. These detections identify when an internal device is communicating with a remote system that appears to be acting as a C&C server.

#### Reconnaissance

An attacker is seeking high-value targets and weaknesses to exploit. These detections identify scans and enumeration techniques.



**Note:** Detections might identify a known vulnerability scanner such as Nessus and Qualys. Click the device name to confirm if the device is already assigned a Vulnerability Scanner role in the ExtraHop system. To learn how to hide detections related to these devices, see [Tune detections](#).

#### Exploitation

An attacker is taking advantage of a known vulnerability on your network to actively exploit your assets. These detections identify unusual and suspicious behaviors associated with exploitation techniques.

#### Lateral Movement

An attacker has infiltrated your network and is moving from device to device in search of higher-value targets. These detections identify unusual device behavior associated with east-west corridor data transfers and connections.

#### Actions on Objective

The attacker is close to achieving their objective, which can vary from stealing sensitive data to encrypting files to ransom. These detections identify when an attacker is close to completing a campaign objective.

**Operation** detections include the following categories.

#### Caution

Highlight activity that does not present an imminent threat to operations, but should be addressed to sustain a healthy security posture. These detections also identify activity by suspicious participants that are associated with threat intelligence.

## Hardening

Highlight security hardening best practices that should be enforced to mitigate the risk of exploitation. These detections identify opportunities to improve the security posture of your network, such as preventing credential exposure and removing expired SSL/TLS certificates from servers.

## Authentication & Access Control

Highlight unsuccessful attempts by users, clients, and servers to log in or access resources. These detections identify potential WiFi issues over authentication, authorization, and audit (AAA) protocols, excessive LDAP errors, or uncover resource-constrained devices.

## Database

Highlight access problems for applications or users based on analysis of database protocols. These detections identify database issues, such as database servers that are sending an excessive number of response errors that might cause slow or failed transactions.

## Desktop & App Virtualization

Highlight long load times or poor quality sessions for end users. These detections identify application issues, such as an excessive number of Zero Windows, which indicates that a Citrix server is overwhelmed.

## Network Infrastructure

Highlight unusual events over the TCP, DNS, and DHCP protocols. These detections might show DHCP issues that are preventing clients from obtaining an IP address from the server, or reveal that services were unable to resolve hostnames due to excessive DNS response errors.

## Service Degradation

Highlight service issues or performance degradation associated with Voice over IP (VoIP), file transfer, and email communications protocols. These detections might show service degradations where VoIP calls have failed and provide the related SIP status code, or show that unauthorized callers have attempted to make several call requests.

## Storage

Highlight problems with user access to specific files and shares found when evaluating network file system traffic. These detections might show that users were prevented from accessing files on Windows servers due to SMB/CIFS issues, or that network-attached storage (NAS) servers could not be reached due to NFS errors.

## Web Application

Highlight poor web server performance or issues observed during traffic analysis over the HTTP protocol. These detections might show that internal server issues are causing an excessive number of 500-level errors, preventing users from reaching the applications and services they need.

## Type

Filter your detection list by a specific detection type, such as Data Exfiltration or Expired SSL Server Certificates. You can also type a CVE identification number into this filter to only show detections for a specific public security vulnerability.

## MITRE Technique

Highlight detections that match specific MITRE technique IDs. The MITRE framework is a widely recognized knowledgebase of attacks.

## Offender and Victim

The offender and victim endpoints associated with a detection are known as participants. You can filter your detection list to only show detections for a specific participant, such as an offender that is an unknown remote IP address, or a victim that is an important server. Gateway or load balancer devices that are associated with external endpoint participants can also be specified in these filters.

## Status

Show detections with a specific detection status, such as Acknowledged, In Progress, or Closed.

## Assignee

Filter detections by the user assigned to the detection.

## More Filters

You can also filter your detections by the following criteria:

- [Device roles](#)
- Source
- Site (console only)
- Ticket ID filter ([Third-party ticketing systems](#) only)
- Minimum Risk Score

# Detection Catalog

The Detection Catalog provides a complete list of all detection types available in the ExtraHop system. You can also manage custom detection types from the Detection Catalog page.

You can access the Detection Catalog page by clicking the System Settings icon .

416 results

| Display Name  | Author   | Detection Type ID            | MITRE Technique                       |
|---|----------|------------------------------|---------------------------------------|
| <input type="checkbox"/> Multiple SMB/CIFS Errors     | ExtraHop | multiple_smb_cifs_errors     | —                                     |
| <input type="checkbox"/> NBT-NS Poisoning             | ExtraHop | nbt_ns_poisoning             | T1557: Man-in-the-Middle              |
| <input type="checkbox"/> Network Privilege Escalation | ExtraHop | network_privilege_escalation | T1021: Remote Services                |
| <input type="checkbox"/> Network Segmentation Breach  | garyp    | network_segmentation_breach  | T1098: Account Manipulation, T1569: S |
| <input type="checkbox"/> Network Share Enumeration    | ExtraHop | network_share_enum           | T1125: Network Share Discovery        |

Create a custom detection type

In addition to the display name and author, you can filter the detection type list by detection type ID, MITRE techniques associated with the detection type, and detection types that support data from flow sensors.

To learn more about a built-in detection, click on the detection, and then click **Detection Type Details** in the Detection Type Settings panel.

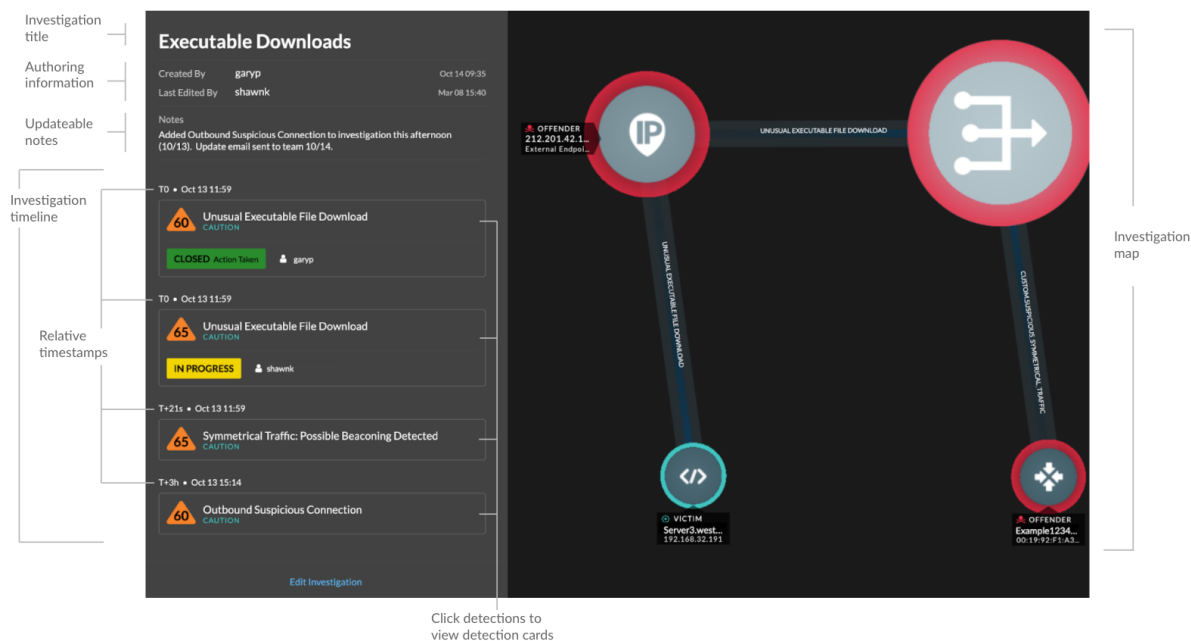
## Custom detections

You can view and manage custom detections from the Detection Catalog page.

- To create a custom detection type, click **Create** in the upper right corner of the page. The detection type ID for the new detection type must match the ID included in the custom detection trigger. Learn more about [creating a custom detection](#).
- To edit a custom detection, click the detection and edit the display name, author, and associated MITRE techniques in the Detection Type Settings panel. You cannot edit built-in detections where ExtraHop is listed as the author.
- To delete a custom detection, click the detection, and then click **Delete** from the Detection Type Settings panel.

## Investigations

Investigations enable you to add and view multiple detections in a single timeline and map. Viewing a map of connected detections can help you determine whether suspicious behavior is a valid threat and if a threat is from a single attack, or part of a larger attack campaign.



You can create and add to investigations from a detection detail page or from the Actions menu on each detection card.

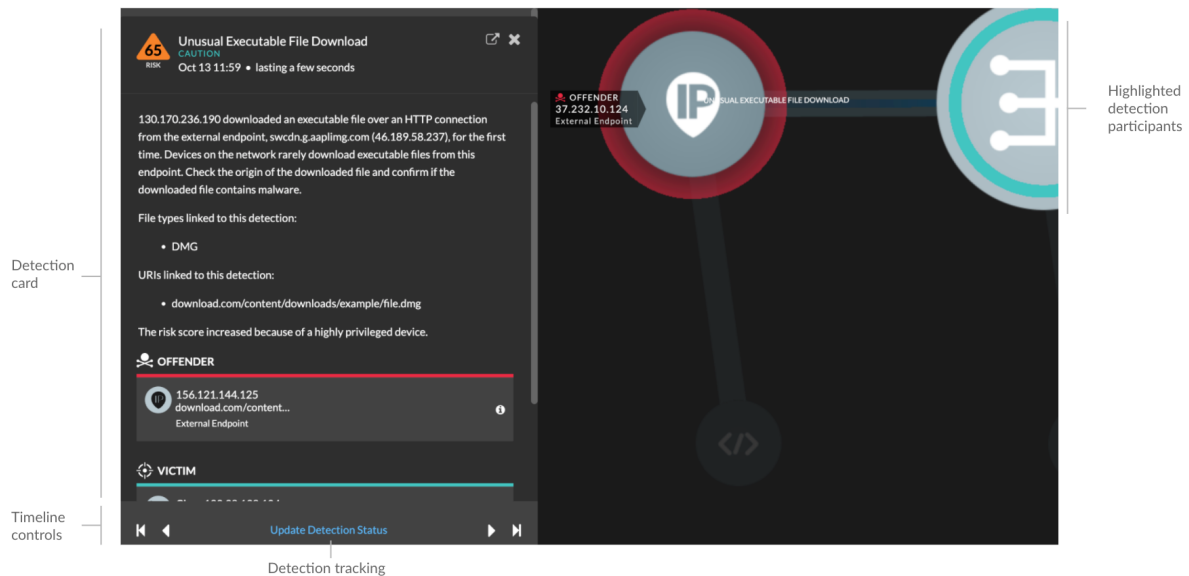
Each investigation page includes the following tools:

### Investigation Timeline

The timeline appears on the left side of the page and lists the added detections in chronological order. New detections that are added appear in the timeline according to the time and date the detection occurred and relative to the earliest detection, which is labeled T0. Detection tracking information, such as assignee and status, is displayed for each detection.

Click a detection in the timeline to view the [detection card](#) and highlight the detection participants in the investigation map. Click a participant on the card or in the investigation map to view basic details and links to the Device Overview page and other detections where the device is a participant.

In the upper right corner of the detection card click the go to [🔗](#) icon to view the [detection detail page](#), or the **x** icon to close the detection and return to the investigation timeline.



Below the detection card, click **Update Detection Status** to edit [detection tracking](#) information. You can click the timeline controls to view other detections in the investigation.

### Investigation Map

The investigation map displays the offender and victim from every detection in the investigation. The participants are connected by lines that are labeled with the detection type, and device roles are represented by an icon.

- Click a detection in the investigation timeline to highlight participants. Circles are highlighted red if the device is the offender and teal if the device is the victim. Highlights are updated when you click a different detection to help you identify when a participant changes from victim to offender.
- Click a circle to view details such as the device hostname, IP address, or MAC address, or to navigate to associated detections or the [Device Overview page](#).
- Hover over any circle or line to display the label.

### Notes

Click **Edit Investigation** to add notes or change the investigation name. You can continue to [track individual detections](#) after you add them to an investigation.

### Navigating investigations

After a detection is added to an investigation, a link to the investigation appears at the bottom of the detection card and on the detection detail page.

Click the name to open the investigation and then click the name of the detection on the investigation page to return to the detection detail page.

98

RISK

Data Exfiltration to S3 Bucket

EXFILTRATION

Jan 29 00:00

lasting 3 hours

workstation10-south performed an unusual upload to an Amazon S3 (Simple Storage Service) bucket. This behavior is unusual based on the amount of transferred data and the time of the transfer. workstation10-south might be compromised and an attacker is attempting to exfiltrate data.

The risk score is higher than normal because one of the participants is a critical device.

OFFENDER

workstation14-south

Site: south5

| S3 Bytes Out by S3 Bucket Metric | 6h Snapshot | 1hr Peak Value | Expected Range | Deviation       |
|----------------------------------|-------------|----------------|----------------|-----------------|
| 168438423658-example             |             | 571 MB         | 0 B - 1 B      | 57,058,367,900% |

S3 Data Watcher

Investigation contains this detection.

By clicking the **Investigations** icon in the upper right corner of the Detections page you can view a list of all investigations on the system.

Last 3 days

Detections by Type

Investigations

TYPES

SOURCES

TECHNIQUES

ALL

Attack (32)

Operations (748)

Any (797)

Type

Category

Technique

Offender

Victim

Status

Assignee

More Filters

Apache Struts 2 Exploit Attempt

EXPLOITATION

Unusual Login Time

LATERAL MOVEMENT

4

VPN Gateway Access from an Unusual Location

DETECTIONS

DETAILS

Learn how to [create an investigation](#).

## Finding detections in the ExtraHop system

While the Detections page provides quick access to all detections, there are indicators and links to detections throughout the ExtraHop system.

**Note:** Detections remain in the system for a minimum of five weeks and then are removed if the system is no longer storing metrics related to the detection.

- From a Device Overview page, click Detections to view a list of associated detections. Click the link for an individual detection to view the detection details page.
- From a Device Group Overview page, click the Detections link to go to the Detections page. The detections list is filtered to the device group as the source.
- From a device or device group protocol page, click the Detections link to go to the Detections page. The detections list is filtered to the source and protocol.
- On an activity map, click a device that displays animated pulses around the circle label to [view a list of associated detections](#). Click the link for an individual detection to view detection details.
- From a chart on a dashboard or protocol page, hover over a [detection marker](#) to display the title of the associated detection or click the marker to view detection details.