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# Use Cases for Dynamic Component Mapping and Relationships

ScienceLogic Version 7.5.1

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# Chapter

# 1

## Dynamic Component Mapping and Relationships

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### Overview

The scenarios described in this manual show how users can use Dynamic Application Relationships in SL1.

The following examples are described in this manual:

- Troubleshooting high utilization on a NetApp volume.
- Troubleshooting Disk I/O on a VMware Virtual Machine.
- Verifying the boot-up configuration for UCS service profiles.
- Validating VPC Subnets Using Custom Views

This chapter covers the following topics:

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# Overview of Dynamic Component Mapping and Relationships

**Dynamic Component Mapping** allows SL1 to collect data from a single management system, such as a VMware ESX server, and then use that data to create multiple device records for the entities managed by that single management system. For example, the managed entities for a VMware ESX server would be the Guest VMs hosted by that ESX server.

SL1 uses Dynamic Applications to retrieve data from the management device and discover each entity managed by that management device. SL1 then uses that retrieved data to create a device for each managed entity. In some cases, the managed entities are nested.

Dynamic Applications can be configured to **automatically create relationships between devices**. For example, the Dynamic Applications in the VMware vSphere and NetApp PowerPacks are configured to create relationships between VMware Datastore component devices and their associated NetApp Volume component devices. Relationships created by Dynamic Applications are used and visualized by SL1 in the same manner as relationships created by topology collection, Dynamic Component Mapping, and manually in the user interface.

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## Possible Applications

The core Dynamic Component Mapping and Dynamic Application Relationships features can be used when building custom Dynamic Applications for unique environments. For example:

- An environment includes servers that have a proprietary SNMP agent that reports NFS file system information. Dynamic Applications were built that collected the NFS mount information and created relationships to the corresponding NetApp volume component devices.
- An environment that, for security reasons, does not have SNMP enabled on network switches or servers, which is the standard collection method for layer-2 topology data. Dynamic Applications were built that used SSH to collect and parse network configuration data to build relationships between the switches and servers. The relationships were then used to enable event suppression and correlation for network connectivity issues.

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# Chapter

# 2

## FlexPod Workflows



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### Overview

This chapter describes how device relationships that are automatically created by SL1 for FlexPod environments can be used:

- To troubleshoot high utilization on a NetApp volume.
- To troubleshoot Disk I/O on a VMware Virtual Machine.
- To verify the boot-up configuration for UCS service profiles.

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon (.
- To view a page containing all of the menu options, click the Advanced menu icon (.

This chapter covers the following topics:

|  |   |
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| <a href="#">Troubleshooting High Utilization on a NetApp Volume</a> .....      | 6 |
| <a href="#">Troubleshooting Disk I/O on a VMware Virtual Machine</a> .....     | 7 |
| <a href="#">Verifying Boot-Up Configuration for UCS Service Profiles</a> ..... | 8 |

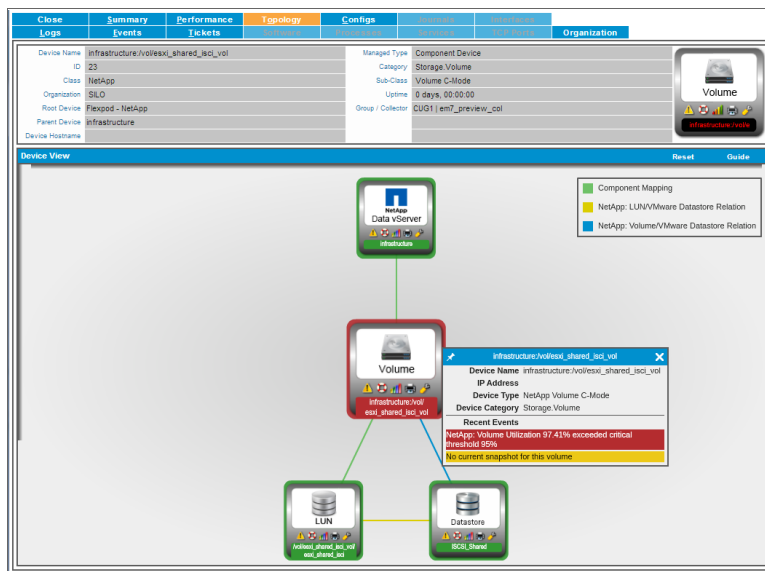
# Troubleshooting High Utilization on a NetApp Volume

Suppose that in the **Event Console** page, an event states that a NetApp volume is over 97% full.

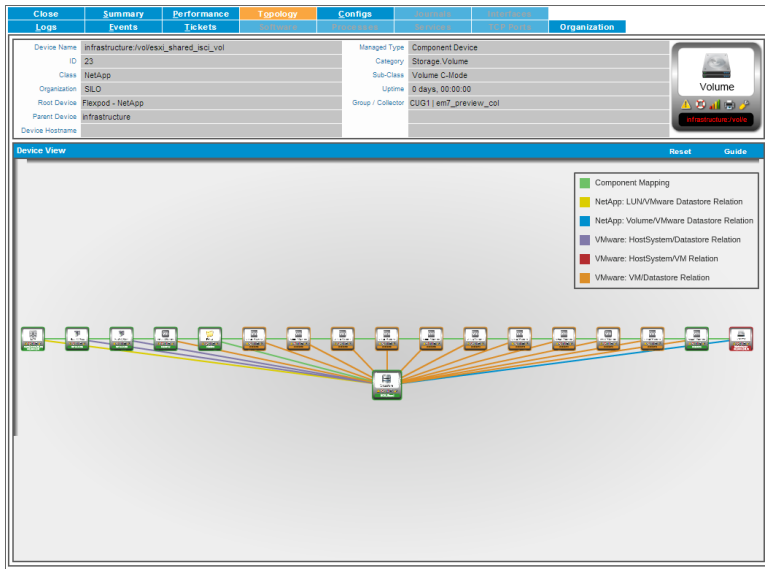
| Organization | Name                 | Type    | Event Message   | Severity | Acknowledged | Note |
|--------------|----------------------|---------|---|----------|--------------|------|
| SILO         | Flexpod - NetApp     | Device  | NetApp: Volume Utilization 97.41% exceeded critical threshold 95% | Critical | --           | --   |
| SILO         | Flexpod - NetApp     | Device  | NetApp: Volume Utilization 95.61% exceeded critical threshold 95% | Critical | --           | --   |
| SILO         | Flexpod - NetApp     | Device  | NetApp: Volume Utilization 95.61% exceeded critical threshold 95% | Critical | --           | --   |
| System       | Service Availability | Service | IT Service State Critical: Service Availability                   | Critical | --           | --   |
| Pittcock     | us-west-2a-t1.mi     | Device  | Device Failed Availability Check: Component device: 1923          | Major    | --           | --   |
| Pittcock     | us-west-2b-t1.mi     | Device  | Device Failed Availability Check: Component device: 1920          | Major    | --           | --   |
| Pittcock     | us-west-2c-t1.mi     | Device  | Device Failed Availability Check: Component device: 1926          | Major    | --           | --   |
| SILO         | CU1.53.101           | Device  | Device Failed Availability Check: Component device: 125           | Major    | --           | --   |
| SILO         | DAS_122              | Device  | VMware: Datastore Utilization Has Exceeded Threshold (81%)        | Major    | --           | --   |

To see which systems use this volume:

1. Select the graph icon (📊) in the **Name** column of the event to drill-down in to detailed information about the volume.
2. Select the **[Topology]** tab. The **Device View** page displays the volume's relationships to other IT infrastructure components. Mousing over a device displays information about that device:



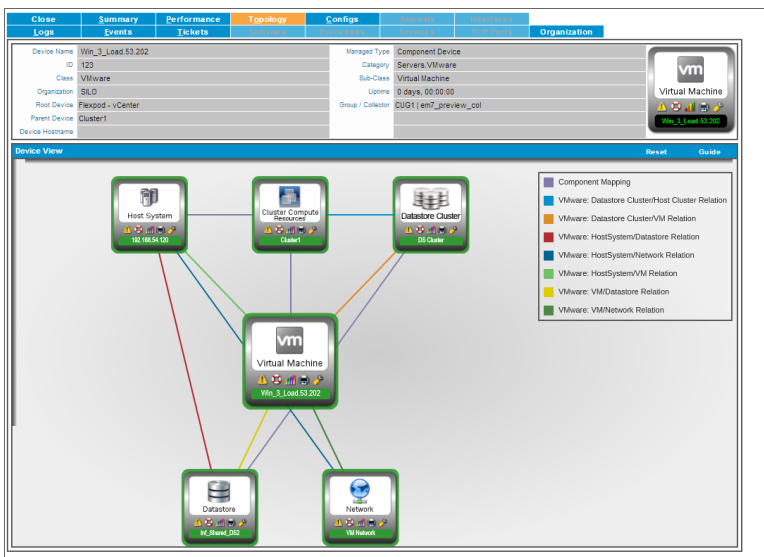
3. Double-clicking on a device opens the topology view for that device. In this example, double-clicking on the VMware datastore related to the volume shows the relationships between the datastore and VMware Virtual Machines:



- From here, you can look at and drill-down to each virtual machine to see which virtual machine is consuming the most storage.

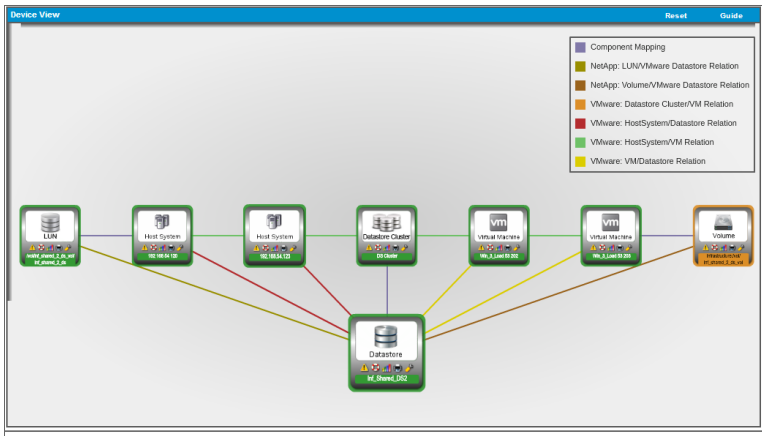
## Troubleshooting Disk I/O on a VMware Virtual Machine

Suppose you are troubleshooting a slow application and the problem was triaged to the Virtualization team. You can see disk I/O issues on a virtual machine. You can go directly to the virtual machine and view the topology:



The virtual machine is shown as part of a compute cluster and also tied to datastore "Inf\_Shared\_DS2".

You can view the topology map for the data store by double-clicking on its device icon:



There are three virtual machines and the underlying NetApp volume and LUN related to the datastore. The NetApp volume is highlighted in orange, indicating a major event is active on that device. From here, you can drill in to the NetApp volume and other related devices to continue troubleshooting the disk I/O issue.

## Verifying Boot-Up Configuration for UCS Service Profiles

This example shows how relationship information can be used to show potential flaws in architecture.

In the case of FlexPod:

- A UCS Service Profile has a 1-to-1 relationship with an ESXi host.
- A VMware datastore has a 1-to-1 relationship with a NetApp LUN.

Suppose that over time, all service profiles were booting from the same NetApp LUN. Suppose that LUN has an issue that caused your entire Virtualization environment to be unavailable. Although the verification process performed by the NetApp system would make this case unlikely, a best practice boot-up design is important for performance and should be validated.


In the screenshot below, which shows the topology map for the NetApp LUN, you can see that four service profiles are related to the same NetApp LUN and Volume for bootup. If the LUN or Volume had an issue, an entire VMware cluster would be affected:



| Close | Summary | Performance | Topology      | Configs       | Inventory     | Relationships | Organization |
|-------|---------|-------------|---------------|---------------|---------------|---------------|--------------|
| Logs  | Events  | Tickets     | Relationships | Relationships | Relationships | Relationships |              |

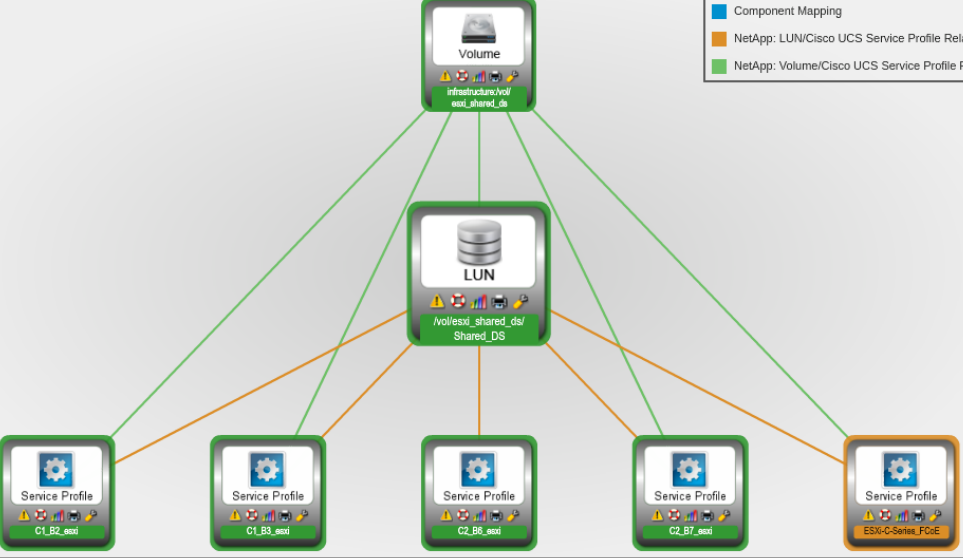
|                 |                       |                   |                        |
|-----------------|-----------------------|-------------------|------------------------|
| Device Name     | C1_B2_esxi            | Managed Type      | Component Device       |
| ID              | 67                    | Category          | Server.Utility         |
| Class           | Cisco Systems         | Sub-Class         | UCS Service Profile    |
| Organization    | SILO                  | Uptime            | 0 days, 00:00:00       |
| Root Device     | Flexpod - UCS         | Group / Collector | CUG1   em7_preview_col |
| Parent Device   | sys/chassis-1/blade-2 |                   |                        |
| Device Hostname |                       |                   |                        |



Service Profile  
C1\_B2\_esxi

**Device View** Reset Guide



```

graph TD
    Volume["Volume  
infrastructure/vol/esxi_shared_ds"]
    LUN["LUN  
/vol/esxi_shared_ds/Shared_DS"]
    SP1["Service Profile  
C1_B2_esxi"]
    SP2["Service Profile  
C1_B3_esxi"]
    SP3["Service Profile  
C2_B6_esxi"]
    SP4["Service Profile  
C2_B7_esxi"]
    SP5["Service Profile  
ESX-C-Series_FCoE"]

    Volume --- LUN
    LUN --- SP1
    LUN --- SP2
    LUN --- SP3
    LUN --- SP4
    LUN --- SP5

```

■ Component Mapping

■ NetApp: LUN/Cisco UCS Service Profile Relation

■ NetApp: Volume/Cisco UCS Service Profile Relation

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# Chapter

# 3



## AWS VPC Subnet Members

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### Overview

This chapter describes how to validate VPC subnets using SL1 when populating AWS VPCs with EC2 instances.

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon ().
- To view a page containing all of the menu options, click the Advanced menu icon (.

This chapter covers the following topics:

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| <i>Validating VPC Subnets Using Custom Views</i> .....                  | 11 |

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# Using Dynamic Component Mapping and Relationships with AWS

The AWS Management Console does not always make it clear where the user is deploying instances . For example, Subnets and VPCs are often identified only by hexadecimal identifiers, e.g. "subnet-4ee6162b", instead of human-readable names:

| Public IP     | Key Name          | Launch Time                  | Security Groups     | VPC ID       | Subnet ID       |
|---------------|-------------------|------------------------------|---------------------|--------------|-----------------|
| 54.72.125.164 | Ireland_Instances | May 5, 2014 1:07:36 PM UTC-4 | HR Internet App ... | vpc-cb4aadae | subnet-4ee6162b |
| 54.72.197.198 | Ireland_Instances | May 5, 2014 2:46:50 PM UTC-4 | Database Tier       | vpc-cb4aadae | subnet-d7e919b2 |
| 54.72.149.129 | Ireland_Instances | May 5, 2014 3:35:10 PM UTC-4 | Database Tier       | vpc-cb4aadae | subnet-2c021e58 |
| 54.72.244.15  | Ireland_Instances | May 5, 2014 1:08:16 PM UTC-4 | HR Internet App ... | vpc-cb4aadae | subnet-2c021e58 |
| 54.72.240.243 | Ireland_Instances | May 5, 2014 1:06:48 PM UTC-4 | HR Internet App ... | vpc-cb4aadae | subnet-8a3f02cc |
| 54.72.146.124 | Ireland_Instances | May 5, 2014 2:31:44 PM UTC-4 | Database Tier       | vpc-cb4aadae | subnet-353b0673 |

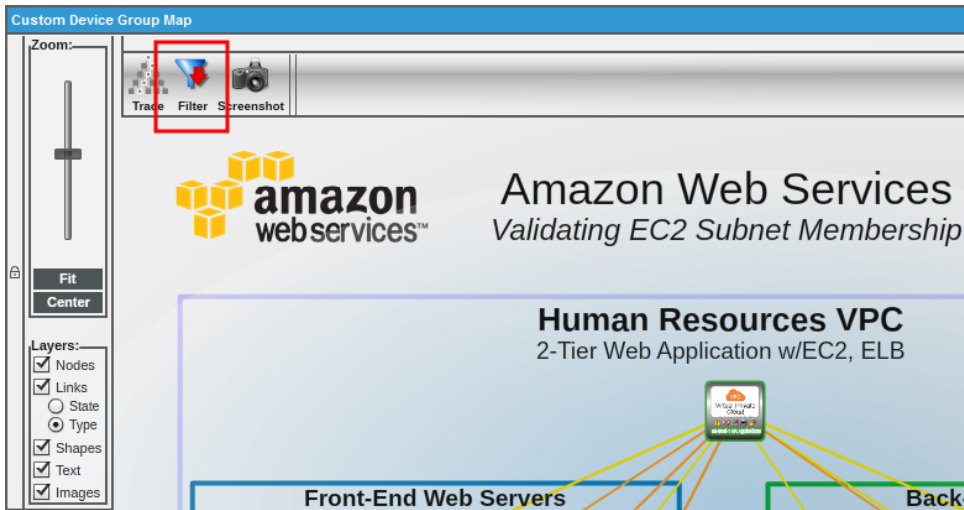
When configuring a large number of devices, it is possible to accidentally provision an instance into the correct VPC but the incorrect subnet. It's also possible to provision the instance into the incorrect VPC.

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## Validating VPC Subnets Using Custom Views

Users can create custom maps by defining a device group. When the map for that device group is viewed, SL1 then automatically includes all the relationships between the included devices. The view in this section includes all Amazon EC2 Instances, VPC Instances, and VPC Subnets in a specific organization:

1. Go to the **[Views]** tab and expand the *My Customized Maps* section of the left NavBar. Select the device group that you want to view.
2. To see the relations between EC2 instances and subnets, but not the relationships between ECS instances and VPCs, select the filter icon:

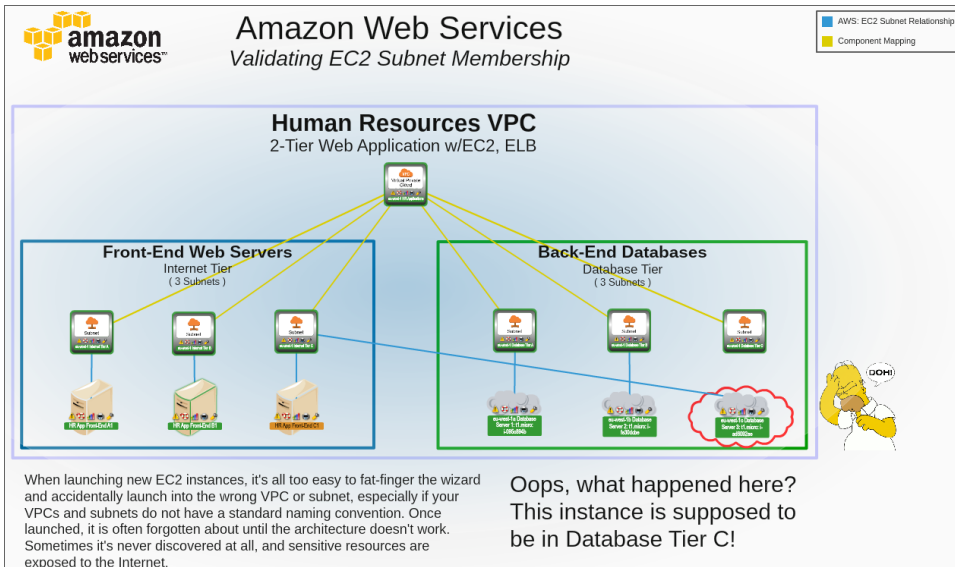


3. In the **Link Types** section, deselect the checkbox for **AWS VPC/EC2**:



In this example, the devices in the device group represent a two-tier application with three web servers and three database servers. The devices are in three availability zones in the Ireland AWS region.

The relationships, which were automatically discovered, are automatically included on the map:



In this example, the circled EC2 instance was accidentally launched into the wrong subnet. It was supposed to be launched into the "Database Tier 3" subnet, but it was launched into "Internet Tier 3" instead, exposing the database server.

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