MATE and WAE Release 6.1

Contents

Platform Support

Release	Supported Until
MATE 5.4	Aug 31, 2015
MATE 5.3	Aug 31, 2015
MATE 5.2 and previous	EOL

How to Upgrade

- Plan files—Plan files from previous versions are read and upgraded automatically on opening in release 6.1.

- MATE Live datastore—To upgrade the datastore from a release prior to 5.6, contact your support representative. To upgrade from a 5.6+ release, use the `mld -action upgrade` command. For assistance, refer to the `mld -help` output.

- Collector server—If using the default installation directory, a database upgrade is automatically performed. For assistance in upgrading the database when the installation directories are not the same, see the Technical Notes, Collector Module section.

- Collector snapshots—If using an upgraded snapshot process, run `archive_init -upgrade` on individual archive repositories before adding them to the server. This ensures that the internal archive database schema is current, but does not upgrade the underlying plan files. The `archive_insert` tool does not automatically run a simulation before inserting a plan file. To check in a plan file containing a simulation, run `mate_sim` on the plan file before running `archive_insert`.

- Add-ons and scripts—Add-ons and scripts may be affected by the schema changes and CLI tool changes that are described in their respective sections.

WAN Automation Engine

The WAE platform enables you to abstract and simplify a WAN environment while making it fully open and programmable. You can automate operations, such as managing, controlling, analyzing, and improving network performance and capacity planning. For information, contact your Cisco representative.

Enhancements

MATE Design

Except where noted otherwise, for information on these features, see the *MATE Design User Guide*.

- Layer 1 simulation enhancements

  o The L1 schema was updated to include L1 circuit paths, L1 circuit path hops, and actual L1 circuit path hops, as well as to include several new properties, such as Standby and MinRoutedPaths. These improvements enable you to model advanced 1+1+R resiliency mechanisms at the WDM layer. They also make it easier to create backup L1 circuits. For details, see the Schema Changes section below, and see the Layer 1 chapter in the *MATE Design User Guide*.

  o The existing Export Routes tool, the L1 Link Wavelength Utilization tool, the Explicit L1 Circuit Path initializer, and the Latency and Distance initializer were updated to incorporate the L1 schema changes, and in particular, to account for L1 circuit paths. For instance, when exporting L1 circuit routes, the simulated active L1 circuit path is now considered. For information on exporting routes and the wavelength tool, see the *MATE Integration and Development Guide*.

  o `copy_from_template` was updated to enable you to easily include or ignore the L1 model. For information, see the *MATE GUI Visualization Guide* or the `-help` output.

- MPLS simulation enhancements

  o Inter-area IS-IS and OSPF LSP routing is now supported, including the ability to simulate inter-area routing both with and without explicit hops being set on ABR nodes. Although this ability to dynamical route across multiple areas without explicit hops at ABR nodes is not supported in standard MPLS routing, it is useful for planning inter-area LSP routes. For instance, you can use a fully dynamic simulation to find an appropriate path, which can then be converted into a (routable) fully explicit path using other tools, such as the Explicit LSP Paths initializer. There is a new network simulation option that controls whether ABR explicit hops are required or not.

  o LSP disjointness is reported on when the LSP Path initializer is run.

- When using the WAE platform, you can now deploy a plan file containing LSP changes directly from the MATE GUI to the network, thus saving you time from having to manually call APIs to deploy these changes.

- Visualization enhancements

  o When clicking on an interface or a circuit, L1 links are highlighted if their L1 circuits are mapped to the L3 circuit. If the interface is a LAG, all the L1 links are highlighted if their L1 circuits are mapped to the port circuit.

  o A new Foreground viewing mode enables you to bring selected objects to the foreground while sending all other objects to the background where they appear as if they are transparent. This greatly improves your ability to work on only a select group of objects.

  o Site, node, L1 node, and interface tooltips give relevant information for the object when you hover the mouse over it. For example, the node tooltip provides the node name, its function (core or edge), its type (physical, psn, virtual), and the number of egress interfaces.

Note: The ability to manage archives from the MATE GUI was removed. You can still use the `archive*` tools available in `/opt/cariden/software/mate/current/bin`.

MATE Live

MATE Live can collect plan files from the new Continuous Poller server, as well as previous methods using the Collector server and archives populated via the snapshot process.

The following new features were not documented. For information, contact your support representative.

- Inventory enhancements

  o Hardware Availability report—Enables you to determine the total number of slots per module, line card, and chassis, and how many are free (empty). It also identifies how many ports are available on a module and how many are down.

  o Hardware Summary report—Lists how many of each hardware item exists in the network, for example, how many line cards and chassis there are. It also includes the vendor and model number of the hardware item.

  o Inventory search feature to easily locate specific hardware.

- Commenting on objects—Enables you to make personal notes on the Inventory and Explore pages that are viewable by other users. For example, you could add an inventory note for other users that a particular slot is reserved for future use. On an Explore page, you could use notes to communicate with other users not to touch an interface whose node is down.

- Multiple networks—Enables you to add networks and switch between them. This is useful, for instance, if you want to partition your data between different geographical regions. There is a separate database for each network, and you can see one network at a time.

- APIs—Enable you to perform those functions seen in the UI through APIs. The documentation is available through the web UI's Help menu.

Collector

For information on Collector server features and configurations, and for information on configuring the Continuous Poller server from the Collector UI, see the *WAE Platform Configuration Guide* unless otherwise noted.

Continuous Poller Server

The new Continuous Poller server enables you to continuously poll interface and LSP traffic statistics and to create a plan file with these statistics on demand. When polling interfaces, VPNs and interface queues statistics can also be polled. The Continuous Poller server is configurable from the Collector UI. From here, you can specify the time interval for collecting raw traffic data and specify the amount of time to expand that interval should data not be collected during that interval.

Collector Server

- Discovery enhancements

  o eBGP peers and neighboring external AS's

  o Layer 3 VPNs

  o SNMP can now be used for IGP node discovery (previously, it was only through login)

- Usability enhancements

  o The database can be upgraded from 6.0 to 6.1, and the Collector server can be rolled back from 6.1 to 6.0. For information, see the Technical Notes section.

  o A collection wizard now automatically guides you through initially configuring the node list when it is in an undefined or incomplete state.

Snapshots

- Discovery enhancements

  o `snmp_find_interfaces` determines the exact match between local and remote LAG ports based on LACP. This applies to LAG ports that are up and in an LACP active mode.

  o `snmp_find_vpn` discovers L2 VPN (VPWS) topologies.

  o `snmp_poll` collects VPWS interface traffic statistics.

  o `mate_auth_init` supports both SNMPv2c and SNMPv3 credentials without having to manually enter the credentials into the `auth.enc` file.

  o Cisco and Juniper
    – `find_bgp` collects and stores 4-byte ASNs.

    – `snmp_find_interfaces` and `snmp_poll` collect GRE tunnels (over IPv4 transport) and their traffic statistics. A side-effect is collecting traffic statistics on both the interface and the GRE tunnel. However, there is no impact on MATE Design Demand Deduction run on interfaces.

  o Alcatel-Lucent: `snmp_find_nodes` and `snmp_poll` collect router QoS queues and interface queue statistics from Alcatel-Lucent devices.

  o Flow enhancements
    – Ability to build fine-grained flows or demands. For instance, you can now build them per VPN, per destination prefix, or per ToS. This will enable you to perform such functions as load balance ingress traffic on a per-prefix basis, or expose and distinguish VoIP from bulk traffic.

    – `flow_manage` and `flow_get` have new options to simplify the aggregation of flow data.

    – `flow_get` exports inter-AS flows.

    – `flow_get` performance improvements reduce flow collection time.

  o Early field-trial only; for information, contact your support representative
    – `get_inventory` collects hardware inventory and creates <NetIntHardware*> tables.

    – `build_inventory` processes the data in these tables so the MATE Live application can use the collected inventory.

    – Alcatel-Lucent: `snmp_find_multicast` and `snmp_poll_multicast` collect IPv4 multicast flows and traffic statistics.

- SAM-OSS interface enhancements

  o MATE 6.0 was certified with SAM 12.0.

  o Logging of `sam_getplan` performance and accounting statistics collection request/response elapsed times at INFO level. This information can assist with troubleshooting efforts.

  o Statistics collection query optimization by batching of requests for performance improvement.

System

- You can now bookmark any page accessed through the web UI, as well as manage these bookmarks. A user with admin rights can also create and manage system-wide bookmarks that are available to all users. Users cannot see each other's bookmarks.

- Environment variables are updated automatically in `/etc/profile.d` on a per-package basis. After running the installer, these take effect by logging out and logging back into the device or VM as the WAE user specified during installation.

Schema Changes

Consult the /opt/cariden/software/mate/current/docs/table_schema.html file for a complete reference.

Removed Schema

Removed Tables

Removed Table	Replacement Table	Notes
<ActualL1CircuitHops>	<ActualL1CircuitPathHops>	All descriptions that previously referenced "L1 circuit" now reference "L1 circuit path"
<L1CircuitHops>	<L1CircuitPathHops>	All descriptions that previously referenced "L1 circuit" now reference "L1 circuit path"

Removed Columns

Table	Removed Column	Replacement Column (If Applicable)
<Circuits>	ActiveL1Circuits	
<L1Circuits>	AutoLambda	
	Backup	
	Delay	
	Distance	
	Lambda	
	NodeA	L1NodeA
	NodeB	L1NodeB
	RerouteOnFailure	
	SetupPriority	
<L1Links>	AvailL1Circuits	AvailL1CircuitPaths
	MaxL1Circuits	MaxL1CircuitPaths
	NodeA	L1NodeA
	NodeB	L1NodeB

Table	Removed Column	Replacement Column (If Applicable)
	NumL1Circuits	NumL1CircuitPaths
	ResvL1Circuits	ResvL1CircuitPaths
	ResvL1CircuitsSim	ResvL1CircuitPathsSim
	WCNumL1Circuits	WCNumL1CircuitPaths
<PortCircuits>	ActiveL1Circuits	
<SimAnalysisWCUtilL1Link>	WCNumL1Cir	WCNumL1CirPath
<SRLGL1Links>	NodeA	L1NodeA
	NodeB	L1NodeB

New Schema

New Tables

New Table	Description
<ActualL1CircuitPathHops>	Discovered L1 circuit path hops. Although Collector does not discover these, if you have a discovered set of L1 circuit path hops, you can edit the .txt plan file to add an <ActualL1CircuitPathHops> table. In the GUI, you can add them using the Actual tab in the L1 circuit path Properties dialog box.
<L1CircuitPaths>	Models the paths available for the L1 circuits. These are listed in the <L1CircuitPaths> table. In the GUI, these are highlighted in green upon selecting them; the number on the highlighted path indicates the Path Option number.
<L1CircuitPathHops>	Models the L1 node or L1 link hops in the L1 circuit path.
<NetIntDemandNameSequence>	Defines the sequence of keys encoded in the Name column of the <Demands> and <DemandTraffic> tables.
<NetIntHardwareBackPlan>	Collected node inventory backplane and serial number data.
<NetIntHardwareChassis>	Collected node inventory chassis and serial number data.
<NetIntHardwareContainer>	Collected node inventory container data.
<NetIntHardwareFan>	Collected node inventory fan and serial number data.
<NetIntHardwareModule>	Collected node inventory module and serial number data.
<NetIntHardwareOther>	Collected node inventory route processor and serial number data.
<NetIntHardwarePort>	Collected node inventory port and serial number data.
<NetIntHardwarePowerSupply>	Collected node inventory power supply and serial number data.
<NetIntHardwareSensor>	Collected node inventory sensor data.
<NetIntInterfaceQueues>	Discovered per-queue interface SNMP data for the Continuous Poller server to use.
<NetIntNodeInventory>	Processed, consolidated node inventory data with hardware type, name, description, and parent ID.

New Columns

Table	New Column	Type	Description
<ActualL1CircuitPathHops> Previously, this was <ActualL1CircuitHops>	PathOption	Key	Path option number of the L1 circuit path.
<Demands>	Reroutable	Plan	Enable/disable the routing of demands around

Table	New Column	Type	Description
			failures. Turning off reroutes around failures might be useful, for example, when simulating Layer 2 traffic.
<L1CircuitPathHops> Previously, this was <L1CircuitHops>	PathOption	Key	Path option number of the L1 circuit path.
<L1Circuits>	ActivePath	Plan	User-specified path option of the active L1 circuit path.
	ActivePathSim	Derived	Simulated path option of the active L1 circuit path.
	L1NodeA	Key	Name of the L1 node A. Previously, this was NodeA.
	L1NodeB	Key	Name of the L1 node B. Previously, this was NodeB.
	MinRoutedPaths	Plan	Number of L1 circuit paths that MATE Design attempts to route.
<L1Links>	AvailL1CircuitPaths	Derived	Number of additional L1 circuit paths that are available to route through the L1 link. This does not include the paths that are currently being routed over the L1 link. The calculation is ResvL1CircuitPathsSim minus NumL1CircuitPaths.
	L1NodeA	Key	Name of the L1 node A. Previously, this was NodeA.
	L1NodeB	Key	Name of the L1 node B. Previously, this was NodeB.
	MaxL1CircuitPaths	Plan	Total number of L1 circuit paths that the L1 link can carry. If not specified, the L1 link has no L1 circuit path restrictions. Previously, this was MaxL1Circuits.
	NumL1CircuitPaths	Derived	Number of L1 circuit paths using the L1 link.
	ResvL1CircuitPaths	Plan	Number of L1 circuit paths that can be reserved to be routed over the L1 link. Previously, this was ResvL1Circuits.
	ResvL1CircuitPathsSim	Derived	If a ResvL1CircuitPaths value is entered, this is copied to the ResvL1CircuitPathsSim column. If the ResvL1Circuit Paths is empty, the MaxL1CircuitPaths value is copied to the ResvL1CircuitPathsSim column. The maximum Lambda value (integer) allowed for an L1 circuit path is limited by the lowest ResvNumL1CircuitPathsSim value of all L1 links in its path. Previously, this was ResvL1CircuitsSim.
	WCNumL1CircuitPaths	Derived	Number of L1 circuit paths traversed in the worse-case failure. Previously, this was WCNumL1Circuits.

Table	New Column	Type	Description
<NetIntInterASFlows>	Extras	Plan	LACP local port index used for LAG port matching.
<Ports>	NetIntActorPortIndex	Key	LACP local port index used for LAG port matching.
	NetIntRemotePortIndex	Key	LACP remote port index used for LAG port matching.
<SimAnalysisWCUtilL1Link>	WCNumL1CirPath	Plan	Highest utilization an L1 link experiences under worst-case failure.
<SRLGL1Links>	L1NodeA	Key	Name of the L1 node A. Previously, this was NodeA.
	L1NodeB	Key	Name of the L1 node B. Previously, this was NodeB.
<VPNNodes>	NetIntVirtualCircuitType	Plan	VPN sub-type for L2VPN pseudo-wires.

CLI Changes

MATE and Collector CLI tools are located in `/opt/cariden/software/mate/current/bin`. For more information on any CLI tool, execute it with the `-help` option.

Removed CLI

Removed CLI Tools

Product	Removed CLI Tool	Replacement
MATE Design	`explicit_L1_circuit_init`	`explicit_L1circuit_path_init`

Removed CLI Options

Product	CLI Tool	Removed Option	Replacement
MATE Design	`export_lambda_util`	`-specify-l1-circuit`	`-specify-l1-circuit-path`

Removed Values for CLI Options

Product	CLI Tool	Option	Removed Values
MATE Design	`metric_opt`	`-failure-sets`	`none`
Collector	`snmp_find_vpn`	`-vpn-type`	`vpls`

New CLI

New CLI Tools

Product	CLI Tool	Description
MATE Design	`explicit_L1circuit_path_init`	Initialize explicit L1 circuit paths for Layer 1 circuits with disjointness specified between certain circuits. Using `-routing-selection`, you can follow currently simulated routes, create disjoint L1 circuit paths between L1 circuits in disjoint groups, or create disjoint L1 circuit paths within L1 circuits. This replaces `explicit_L1circuit_init`.
Collector	`build_inventory`	This processes the NetIntHardware* tables so that inventory collection can be made available for use in MATE Live. As input, it uses the plan file generated from `get_inventory` and a number of template configuration files. This is an early field-trial tool only. For information, contact your support representative.
	`collector_pushplan`	Push a plan file, network authorization file, and/or network access file to the Continuous Poller server.
	`flow_list`	Get the location of the file containing inter-AS flows corresponding to specified input plan file.
	`get_inventory`	Use SNMP to access a network and collect inventory information. For Juniper routers, use NETCONF to log in and get SFP transceiver information that is not available via SNMP. This is an early field-trial tool only. For information, contact your support representative.

New MATE Design CLI Options

CLI Tool	New Option	Description
`copy_from_template`	`-missingL1 <replace/none>`	`replace` (default): replaces the L1 model with the one in the template. `none`: Ignore the L1 model in the template. Only applies if using `-method missing` for L3 objects. You cannot copy L1 objects without copying L3 objects.
	`-visualL1 <true/false>`	Specify whether to copy L1 visual layout information. The default is `false`.
`export_lambda_util`	`-specify-l1-circuit-path <true/false>`	Specify whether to identify the L1 circuit path that is using the lambda. The default is `false`. If `true`, the Lambda property of the L1 circuit path must be `true` for this path to appear in the report. The L1 circuit path format is l1ctp{L1 Node A	L1 Node B	L1 Circuit	Path Option}.

New MATE Live CLI Options

CLI Tool	New Option	Description
`ml_insert_ctl`	`-network`	The name of a network in the datastore. Used by `-insert` and `-list` options.
`ml_insert_plan`	`-network`	Insert data into the specified network in the datastore. If no name is given, the default network is used.
`ml_read`	`-network`	List the available networks.

New Collector CLI Options

CLI Tool	New Option	Description
`embedded_web_server`	`-autoupgrade <true/false>`	If `true` (default), the Collector database is automatically upgraded from 6.0 to 6.1. If `false`, it is not upgraded. Note, the web server is automatically started (and thus, the database is upgraded) upon installing release 6.1.
`flow_get`	`-extra-aggregation`	Comma-separated list of aggregation keys. **Example:** `src_mask,dst_mask,tos` For a full list of available aggregation keys, use the `-list-extra-aggregation-keys` option.
	`-inter-as-flows-file`	File name to export inter-AS flows to when `-inter-as-flows` is `true`. The exported file is in a tab-delimited format.
	`-list-extra-aggregation-keys`	List of available aggregation keys for use with the `-extra-aggregation` option.
`flow_manage`	`-extra-aggregation`	Comma-separated list of aggregation keys. **Example:** `src_mask,dst_mask,tos` For a full list of available aggregation keys, use the `-list-extra-aggregation-keys` option.
	`-list-extra-aggregation-keys`	List of available aggregation keys for use with the `-extra-aggregation` option.

New MATE Design Values for CLI Options

CLI Tool	Option	New Value	Description
`export_routes`	`-object`	`l1circuitpaths`	Create <L1CircuitPathHops> table for all L1 circuit path.

`metric_opt`	`-failure-sets`	`externalEndPointMembers`
		`portcircuits`
		`ports`
		`srlgs`
			Additional failure sets for consideration when optimizing metrics.

Changed CLI Behavior

M ATE Design Changed CLI Behavior

CLI Tool	Option	Value	New Behavior
copy_from_template	-method	missing	No longer copies the L1 model. Use the -missingL1 option.
export_routes	-object-table		Can now take a file containing an <L1CircuitPaths> table.

Collector Changed CLI Behavior

CLI Tool	Option	New Behavior
collector_getplan		You can now get the plan file from the Collector server or the Continuous Poller server.
	-if-later-than-timestamp-file	File must be local.
	-set-credentials	No longer has to be the only option, if specified.
parse_configs	-ospf-proc-id	Matches against either the name or number of the OSPF process ID (previously, it matched only against the number).

Open Source

This product includes the following.

- Software developed by MetaStuff (http://www.dom4j.org)
- Cryptographic software written by Eric Young (eay@cryptsoft.com)
- Software developed by the OpenSSL project for use in the OpenSSL Toolkit (http://www.openssl.org/)
- Software written by Tim Hudson (tjh@cryptsoft.com)
- Software developed by the University of California, Berkeley and its contributors

Issues Fixed

Issues Fixed Since 6.0.4

MATE Design

Key	Summary
CSCus27977	DistanceSim property in <Interfaces> table is not properly updated
CSCus30897	Traffic Distribution add-on is not opening in Windows
CSCus49304	Add-on out-file parameter fails to write the output plan file or open it upon add-on completion

MATE Live

Key	Summary
CSCup54686	LAG logical Interfaces are not displayed on the Explore page
CSCur38125	Empty inventory table displays a misleading error
CSCus08887	Greenfield MATE Live installation fails to create default template
CSCus16371	Map Peering panel fails to display an "Interface Down" event

Collector

Key	Summary
CSCum76943	No measured traffic is retrieved via SNMP from Juniper routers running JunOS 11.4 due to `net_access.txt` configuration
CSCur56356	`snmp_find_interfaces -lag-port-match exact` not working properly when a port is down
CSCus03407	Banner configured on router causes CLI `login` to fail
CSCus10468	Severe performance issue with `sam_getplan`
CSCus11069	snmp_find_interfaces -lag true takes too long to complete
CSCus25227	`flow_get` causes a NetFlow data discrepancy
CSCus39530	parse_configs -igp-protocol isis -isis-level 1 stops running
CSCus59646	Hardware model is not populated in the plan file for C3750ME devices
CSCus61303	`flow_get` stops running and gives SQL error
Collector Server	
CSCus47071	Collector server puts wrong IP in `auth.enc` file
CSCus67091	Unable to configure global node access rules due to failure in sorting of IP addresses in the node list

System

Key	Summary
CSCup55576	`mate_tech_support` truncates all text files to a length of 10,000 lines
CSCuq31226	Upgrade SSL from 1.0.1h to 1.0.1i is required
CSCus24517	Processes are leaving files in `/tmp`

Issues Fixed Since 6.0.3

MATE Design

Key	Summary
CSCuo65910	Internal error occurs when closing multiple plan files (Mac OS X prior to 10.8)
CSCur44673	Improperly releasing resources potentially causes MATE Design to stop working
CSCur70608	When nodes are not in sites and newly discovered nodes are added, existing nodes are incorrectly placed in an ExtraNodes site
CSCur79747	Explicit LSP Path Initializer removes disjointness when creating disjoint paths between LSPs in disjoint groups using nodes
CSCur90091	Traffic Distribution add-on is not working
CSCus01527	TraffSim of interfaces on a failed circuit show random, non-zero numbers using MATE API
CSCus09302	When saving a template to a remote MATE Live server, trailing blanks are not ignored

MATE Live

Key	Summary
CSCur64366	Cannot interpret interface description with a pipe (	), causing plan file insertions to exit
CSCur78304	Map does not display correctly when the URL is directly entered without going through the UI
CSCur90725	Filtering to LAG member interfaces is not working
CSCus24767	`ml_restore` does not restart the mld server

Collector

Key	Summary
CSCus08137	When two active BGP sessions are between the same nodes, `flow_get` results in the FromNeighborAS column of the <NetIntInterASFlows> table being null

Issues Fixed Since 6.0.2

MATE Design

Key	Summary
CSCuq92527	`copy_from_template` does not overwrite unresolved interfaces
CSCur26239	`explicit_LSP_path_init` does not correctly create disjoint paths when both circuits and nodes are considered
CSCur28391	`lsp_loadshare_opt` does not consider LSPs if their Loadshare value is 0
CSCur30223	Topology constraints are not set correctly for networks with multiple IS-IS levels
CSCur33792	`copy_from_template` stops working when a node is not within a site
CSCur54715	DelaySim on SR (segment-routed) LSP is marked "inf" when it should be "na"
CSCur55304	When Get Parse Configs is executed on a plan file containing only one node, MATE Design stops running upon selecting an LSP
CSCur55514	`copy_from_template` incorrectly sets extra ports and port circuits to an Active state
CSCur57564	Cmd-A does not select all objects in a demand plot (Mac OS X)
CSCur74836	`merge_circuits` incorrectly derives CapacitySim when nodes have multiple LAGs between them

MATE Live

Key	Summary
CSCur35955	Unable to insert interfaces into an archive
CSCur38570	Job status queue is not cleaned up
CSCur70431	Passwords containing % character do not work

Collector

Key	Summary
CSCur29061	Measured source and destination VPN traffic is inaccurate
CSCur32684	Interface capacity is inaccurate for Huawei routers
CSCur33743	`parse_configs` is dropping some Juniper configurations
CSCur34069	Remove `vpls` as a possible value for `snmp_find_vpn -vpn-type`
CSCur34607	Collector stops running when discovering L3VPNs on Huawei routers
CSCur37450	`snmp_find_interfaces` does not ignore administratively down interfaces
CSCur37950	Measured source and destination VPWS node traffic is inaccurate
CSCur49021	Need to detect all LSAs marked for deletion (regardless of MaxAge)
CSCur56577	`parse_configs` drops config files and ignore nodes, which causes subsequent LSP discovery to be inaccurate
CSCur60490	Interfaces on a peer router are missing the ASN, causing flows to be incorrectly classified
CSCur79051	Active IPv6 interfaces incorrectly set to inactive after an upgrade
Collector Server	
CSCur12260	Test feature on Node List page shows nodes as down, when they are up

System

Key	Summary
CSCuq41168	Receiving unwarranted MATE Live datastore error upon logging in

Issues Fixed Since 6.0.1

MATE Design

Key	Summary
CSCuq41544	Keystrokes Cmd-1 and Cmd-3 do not switch between Layer 1 and Layer 3 views on Mac OS X Maverick
CSCuq72503	Automatic Simulation is not working with tagged or private LSPs
CSCuq84141	Layer 1 nodes created in the Layer 3 view temporarily appear
CSCuq98977	Performance issues when switching new plan to a geographic layout
CSCur03341	metric_opt -failure-set externalEndPointMembers not recognized
CSCur12945	Detailed Background Map plot option causes errors
CSCur19548	Delay calculation of demand in segment-routed LSP is incorrect

MATE Live

Key	Summary
CSCuq96808	Temp files in `$CARIDEN_HOME/lib/web/apache-tomcat-6.0.37` not cleared, causing insertion failures
CSCur17795	Unable to filter reports

Collector

Key	Summary
CSCup13061	<NodeTraffic> table does not properly total traffic through the node
CSCuq30519	`snmp_find_vpn` runs indefinitely when collecting VPWS data
CSCuq59703	`flow_get` does not put all flows in <Demands> table
CSCuq92159	`sam_getplan` populates <SRLGCircuits> table with two entries for a single circuit
CSCur04575	`flow_get` gives Java exception error and stops running
CSCur06191	Not discovering all interfaces when operating in Safe mode and there are two subnet matches for the same interface, one for IPv4 and one for IPv6
CSCur16461	`parse_configs` results in higher simulated capacity than derived capacity on LAG interfaces
CSCur29134	`parse_configs` does not parse the OSFP link cost
Collector Server	
CSCuq45154	Config Reset feature does not reset configuration to defaults
CSCur11122	Passwords and Enable Passwords are visible in Node List table when using a browser's debugger

System

Key	Summary
CSCuq66567	Unable to delete LDAP groups-to-roles mapping entry
CSCuq70592	`archive_*` CLI tools, such as `archive_delete`, hang indefinitely
CSCuq94912	LDAP exceptions create Java exceptions for the user

Issues Fixed Since 6.0

MATE Design

Key	Summary
CSCun35099	Warning message for Demand Deduction incorrectly references a network option
CSCup61266	`copy_from_template` overwrites `find_bgp` (AS internal) setting
CSCup85324	`changeover` does not detect a change in the Active attribute of LSPs and LSP paths
CSCuq09057	Scrolling on the network plot does not work after having zoomed to a specific area
CSCuq09564	Remove deprecated CLI tools and options

MATE Live

Key	Summary
CSCuo36601	Interface traffic report graphs show P95 traffic plotted beyond available data
CSCuo44085	`ml_insert_ctl -disable-scheduler` does not pause the importing of plan files
CSCuo58341	Cookies create Java errors on the Map's weathermap
CSCup27214	After restarting `mld`, the Map's dates and timestamps are not available from the plan file selection area
CSCup72863	Unable to cancel jobs after running `ml_insert`
CSCup92865	Node Ad Hoc reports fail if using Change Count time aggregation for the SNMPError property
CSCuq33866	When importing plan files from the Collector server or external archive, nodes are removed from the template after a single failed discovery
CSCuq38794	Internet Explorer 9.x browser does not properly render MATE Live

Collector

Key	Summary
CSCum48238	`collector_getplan` fails with Java error
CSCun04529	Change location of IGP database creation from data directory to debug directory.
CSCun58943	`snapshot` should abort if `sam_getplan` fails
CSCun82244	find_igp -peer-protocol ipv6 does not work properly
CSCup38586	`flow_get` does not capture all demands
CSCup71112	`sam_getplan -include-frr-lsp true` does not properly populate the <ActualPathHops> table when LSPs traverse non-Alcatel nodes
CSCuq09339	`sam_getplan` does not completely populate the ISISArea column in the <Nodes> table
CSCuq24252	`snmp_poll` does not discover all queue traffic
CSCuq29643	<NetIntIpAddresses> table does not populate the IpAddress column with loopback addresses, thus causing RSVP-TE LSPs to be incorrectly shown in MATE Design
Collector Server	
CSCum48246	Updating results on the Log page becomes very slow after 12 hours of operation
CSCum53563	Log level WARN produces debug level of logging
CSCum53991	404 (not found) error returns, rather than serving the last plan file
CSCum55608	Counter starts between collections, rather than based on the clock
CSCum60419	`snapshot` does not look for auth.enc in `$CARIDEN_ROOT/etc`
CSCuo12110	Internal `copy_from_template` overwrites discovered interface affinities
CSCuq07632	Unexpected results when filtering a node list to find hostnames that do not contain n/a
CSCuq18827	Backup and restore operations should get hash for database schema automatically
CSCuq22566	Database should be in autocommit=off
CSCuq22573	Files are left in /tmp/schema-generator-remove-me-[username]/[pid]
CSCuq36215	Editing a node in the Node List page impacts subsequent regular expressions added to the Node Inclusion page
CSCuq37673	Using the Advanced Config feature, validation tests for adding options does not check for white spaces
CSCuq40169	"IGP not configured" message incorrectly appearing after a configuration has been saved
CSCuq40247	Node List table does not populate model and OS properties for Juniper routers

Key	Summary
CSCuq43573	Extraneous temp files are created in $CARIDEN_HOME/lib/web/apache-tomcat-6.0.37/temp/collector-zip/
CSCuq47701	"All" selection on Node List page does not select all nodes
CSCuq51095	Grammar error in Advanced Config feature on What to Collect page

System

Key	Summary
CSCum53325	Login message that the server is not available is unclear
CSCum58161	`embedded_web_server` does not shutdown properly
CSCup27329	Unable to authenticate with `mate_archive`
CSCup67880	LDAP issues with authentication and mapping roles to groups
CSCuq52565	`mate_archive` returns incorrect error message when an incorrect LDAP password is used
CSCuq07861	User without an admin role cannot log in to the MATE UI

Known Limitations

MATE Design

EIGRP routing simulation is not accurate. This issue will be corrected in a future release. Until then we recommend that it not be used.

MATE Live

- L2 interface types are categorized incorrectly as "individual physical interfaces" on the Explore Interfaces page.

- The "Unknown" interface type is not used.

- You cannot create a network from the UI upon initial startup. The workaround is as follows.

  1. Stop the web server.

     ```
     service wae-web-server stop
     ```

  2. Restart the web server from a directory that has permissions for the WAE user specified during installation. Use this specific command.

     ```
     embedded_web_server -action start
     ```

Collector

Due to vendor MIB limitations, Collector cannot represent QoS traffic on interfaces that have more than one VLAN configured. If a network contains such interfaces, their queue traffic statistics are omitted from the collection. The total traffic on these interfaces is still measured. As a result, per class-of-service demands estimated through Demand Deduction are less accurate. Estimates of traffic totals over all classes of services, however, are not affected.

Collector Server

- Collector server is not making plan files available. The workaround is to delete the snapshot directories from previous releases. These are in `$CARIDEN_ROOT/data/collector/server/snapshots`.

- If upgrading the Collector server from release 5.6x to 6.1x, the `$CARIDEN_ROOT/etc/collector/server/db-persistence/DiscoveryEngineImplementation.db` file must be removed prior to starting the web server. Since installation automatically starts the web server, the recommendation is to remove this prior to installation.

- OSPFv.2 databases cannot be collected via SNMP. The workaround is to use a manual snapshot.

- OSPFv.3 and IPv6 IS-IS databases cannot be collected. The workaround is to use a manual snapshot.

- SNMPv.3 device access is not supported. The workaround is to use a manual snapshot and `mate_auth_init`.

Snapshots

- `snmp_find_interfaces`
  - Does not support association of GRE tunnel with the physical interface it uses to reach the tunnel destination since the IP-Tunnel MIB lacks this information.

  - Does not update LAG port status if LAGs are discovered using both `parse_configs` and `snmp_find_interfaces`. The workaround is to use only `snmp_find_interfaces`.

- Juniper routers: Signaled standby LSP path option is not available from the standard MPLS-TE MIB for Juniper routers. Only the active path option name is collected.

- IOS XR routers
  - IGP topology collected through `parse_igp` and `login_find_igp_db`

    – IS-IS link-state database with TE extensions contains incorrect interface "admin-weights" (TE metric) on Intel-based routers.

    – IPv6 IS-IS link-state database does not contain IPv6 interface addresses or parallel interfaces. This information is only available when IOS XR supports IS-IS IPv6 TE extensions. The `snmp_find_interfaces` tool collects this information.

  - MAC Accounting is not supported.

  - `snmp_find_rsvp` does not set the Standby value in the <LSPPaths> table for signaled backup paths.

- BGP peers
  - `find_bgp` does not build BGP pseudo-nodes among internal ASNs.

  - `find_bgp` does not collect BGP peers under PE-CE VRFs.

- `parse_configs` does not accurately detect the bandwidth of some Juniper 'ge' interfaces that have a capacity of 10 Gbps.

SAM-OSS Integration with Snapshots

- `sam_getplan` does not populate the <NodeTraffic> table. This table is derived and populated when `sam_getplan` and SNMP tools are used together.

- `sam_getplan` does not populate the NetIntActivePath column in the <LSPs> table.

- If `sam_getplan` and SNMP tools are used together in the snapshot process for multi-vendor network collection, then Alcatel-Lucent traffic measurements cannot be aligned with those collected from other router platforms.

System

Web User Management

Both the System UI and the MATE Design Archive UI have user management capabilities. If both are used to configure users, MATE uses the most recently updated information. The recommendation is to use only the System UI to manage users.

Starting MATE Design in Linux

The `$CARIDEN_HOME` directory is not automatically added to `$PATH` (only `$CARIDEN_HOME/bin` is). If not in `$CARIDEN_HOME/bin`, to start the MATE GUI from the command line, you must specify its full path.

```
/opt/cariden/software/mate/current/mate
```

WAE High-Availability

The wae-ha-deploy script is not updated with the proper version, rendering the wae-core modules unable to start in a multi-server (HA) environment. The workaround is as follows.

1. Modify the `/wae-platsvcs/confmgmt/roles/wae-core/templates/org.apache.karaf.features.cfg.j2` file on the primary node, as follows.

   Change this line

   ```
   mvn:com.cisco.wano/nsps-core/1.1.2-SNAPSHOT/xml/features
   ```

   To

   ```
   mvn:com.cisco.wano/nsps-core/1.2.0/xml/features
   ```

2. Run the wae-ha-deploy script.

License Check Failures on Newer Linux Distributions

Some newer Linux distributions have started using a new way (via `biosdevname`) of naming hardware devices, including the network interfaces. This causes some software that depends on the traditional naming (for example, `eth0`, `eth1`) to fail on license checks, including MATE.

The workaround is to append `biosdevname=0` to the kernel line of the grub configuration file and reboot. (Syntax varies among distributions.)

After reboot, you should be able use `ifconfig` to verify that the NIC are named `eth0` (or `eth1`, ...) instead of the `biosdevname` names (such as `p34p1`).

Java Memory

Certain tools (such as `sam_getplan` and `parse_configs`, for example) may require more memory to start than what is available. The symptom is an error message similar to the following.

```
Error occurred during initialization of VM.

Could not reserve enough space for object heap.

Error: Could not create the Java Virtual Machine.

Error: A fatal exception has occurred. Program will exit.
```

The workaround is to set the maximum memory to a low enough value in the `CARIDEN_JAVA_OPTIONS` variable before calling the tool. An example setting is as follows.

```
set CARIDEN_JAVA_OPTIONS=-Xmx1000m
```

Documentation

The following information is missing from the documentation set.

- *MATE and WAE Installation Guide* (See the Technical Notes, Installation section.)
- *MATE GUI Installation Guide* (See the Technical Notes, Installation section.)
- Starting and stopping services (See the Technical Notes, Starting and Stopping Services section)
- Web server management (Contact your support representative.)
- Collector Module
  - Continuous Poller server log file location (See the Technical Notes, Collector Module section.)
  - Configuring advanced and manual snapshots with the Continuous Poller server (Contact your support representative.)
  - Upgrading the Collector server's database from 6.0 to 6.1 (See the Technical Notes, Collector Module section.)
  - Rolling back the Collector server to 6.0 (See the Technical Notes, Collector Module section.)
- MATE Live
  - New feature updates in the *MATE Live User Guide* (Contact your support representative.)
  - Multi-network discovery and making plan files from multiple networks available to the MATE Live UI (Contact your support representative.)

Technical Notes

Starting and Stopping Services

Upon the installation process finishing, the wae-collector and wae-web-server services are automatically started.

The format for manually starting and stopping a service is as follows.

```
service <service_name> start
service <service_name> stop
```

Example: Stop the wae-web-server service.

```
service wae-web-server stop
```

You can also get the status of a service.

```
service <service_name> status
```

Example: Get the status of the wae-collector service, which runs the Continuous Poller server.

```
service wae-collector status
```

The scripts for starting and stopping services are located in `/etc/init.d`, which in turn points to `/usr/local/bin`. Whether these scripts are executed on startup is handled by symbolic links created in `/etc/rc#.d` directories, where # is a number 0 through 6.

You can use `chkconfig` to disable, enable, and view startup settings.

For more information on `service` and `chkconfig` utilities, use the man pages.

```
man service
man chkconfig
```

Installation

Linux (Server and Stand-Alone MATE Design)

Environment Variables
The manner in which environment variables are set has changed. These are no longer set in a per-package `etc/profile` file. All profiles are created automatically in `/etc/profile.d` on a per-package basis. After running the installer, these take effect by logging out and logging back into the device or VM as the WAE user that was specified during installation.

Note: The user setup of environment variables overrides the system setup of environment variables.

Services
Upon the installation process finishing, all services are automatically started. Only one is prompted for during the installation process.

Best Practices
- If this is an upgrade from 6.0 and you are installing in a different installation directory, preserve a copy of the 6.0 `$CARIDEN_ROOT/etc/collector/server/db-persistence/DiscoveryEngineImplementation.db` file. The purpose is in case you need to roll back to 6.0.

- Use the NTP (Network Time Protocol) for synchronizing times on all routers and all servers used in the collection process and high-availability clusters. For instance, router and collection server synchronization is required to produce accurate traffic tables and collection log timestamps.

Pre-Requisites
- System requirements must be in place. See the System Requirements document posted on the customer download portal.

- Stop all 6.0 MATE processes if they are running.

    6.0 Examples:

    ```
    embedded_web_server -action stop
    mld -action stop
    ```

Installation Process

1. Download the package from the Cisco customer download portal. If you would like to use the WAE product, contact your Cisco representative.

2. Install the package as root.

    ```
    sudo bash <package>.bin
    ```

3. The process prompts you for an installation directory. The default is `/opt/cariden`. If this is an upgrade, the recommendation is that you maintain the same installation directory as in the previous release. If this is a new installation, the recommendation is to keep this default.

4. The process prompts you for a WAE username. The default is "cariden" only if that username exists; its existing password remains intact. Otherwise, the default WAE username is "wae." The default password for the wae username is "ciscowae." The recommendation is that you keep whichever default you receive. Also, consider that if you have previously installed the MATE Live datastore (`mld`), you cannot restart it unless you start it with the same username used to install it.

5. The process prompts for whether you want to start SDN platform services. The default is "No." Unless you have a WAE license, this service is of no use, but will still use memory and disk space. The recommendation is that you keep the default unless you have a WAE license.

6. Depending on what the installation process finds, it might prompt you to continue or not.

7. Once the installation process stops, log out of the device or VM.

8. Log back in using the WAE username.

9. Install the license using one of these methods. If you are intending to use WAE, you need two licenses, and the two licenses must be merged.

    *   Use the `license_install` tool. (The default is to merge licenses.)

        ```
        license_install –file <path>/<filename>.lic
        ```

    *   If this is not a stand-alone MATE Design installation, you can use the web UI to install licenses.

10. If you are installing, starting, or upgrading the MATE Live datastore (`mld`), stop the web server. For more information about the MATE Live datastore, see the *MATE Live Configuration Guide*.

    A. Stop the web server: `service wae-web-server stop`

    B. Install, start, **or** upgrade MATE Live datastore.

        Install and start mld server: `mld –action install –size [DSML]`

        Start mld server: `mld –action start`

        Upgrade an existing mld server and start it: `mld –action upgrade`

C. Start the web server: `service wae-web-server start`

11. To start additional services, see the Start and Stop Services section.

12. To start MATE Design from a terminal, use the `mate` command.

    From `/opt/cariden/software/mate/current`, enter the following.

    `./mate`

    From elsewhere, use the full path.

    `/opt/cariden/software/mate/current/mate`

Windows and Mac OS X (Stand-Alone MATE Design Only)

1. Download the package from the MATE download page on the Cisco customer portal. In Windows, this is a .zip file. In Mac OS X, this is a .tar.gz file.

2. Extract the files in a location of your choice.

3. Install the license using one of these methods.

   – Use the `license_install` tool.

     `license_install -file <path>/<filename>.lic`

   – Use the MATE GUI's File->License Install menu.

4. Start MATE Design from the directory in which the MATE software is installed. From an Explorer (Windows) or Finder (Mac) window, double-click the `mate` executable.

Web Server

Starting and Stopping Web Server

The web server is used by both the Collector server and MATE Live. It is started upon installing the product. Although you can continue to use the `embedded_web_server` tool, the recommended method of starting or stopping this server is as follows.

```
service wae-web-server start
service wae-web-server stop
```

If you need to change behavior of the `embedded_web_server` tool, you can execute this tool with appropriate options. For information, see `embedded_web_server -help` output. The behavior change takes effect only upon restarting the server.

Note: The mld server cannot be installed, started, or upgraded while the web server is running.

Log Files

The web server log files remain in the
`/opt/cariden/software/mate/current/lib/web/apache-tomcat-6.0.37/logs` when the
default installation directory is used.

Collector Module

Continuous Poller Server

Username and Password

For information on changing the Continuous Poller password, see the `/opt/cariden/software/wae-collector/WAECollectorAuth_README.txt` file.

Default username: admin

Default password: cariden

Starting and Stopping

The Continuous Poller server is started upon installing the product. To start or stop the Continuous Poller server otherwise, execute these commands.

```
service wae-collector start
service wae-collector stop
```

Snapshot Configuration

To use the Continuous Poller server with snapshots, you must first start it and know its username and password.

You can retrieve plan files from the Continuous Poller server using the `collector_getplan` tool, or you can push a plan file to this server using the new `collector_pushplan` tool. If using manual snapshots, you must configure the server using the `/opt/cariden/software/wae-collector/etc/collection.cfg` file. For further assistance, contact your support representative.

Log Files

The `mate_tech_support` tool does not include Continuous Poller logs. Continuous Poller server log files are in the following locations when the default installation directory is used.

- `/opt/cariden/logs/continuous_collector/poller.log`

- `/opt/cariden/logs/continuous_collector/collector-core.log`

For More Information

- Configure MATE Live to get plan files from this server, see the *MATE Live Configuration Guide*.

- Determine the health of the Continuous Poller server via JMX console, contact your support representative.

Collector Server

Log Files

The Collector server log files are in the `/opt/cariden/logs/collector_server` when the default installation directory is used.

Upgrade the Collector Server Database

Upgrades are supported between 6.0 and 6.1, and between the 6.0.# maintenance releases and 6.1. Throughout this upgrade section, any references to 6.0 could be substituted for a 6.0 maintenance release, such as 6.0.3.

Note: You must have appropriate read/write permissions. These permissions might have changed if you installed with a different username in 6.1 than in 6.0.

<ins>Same Installation Directory</ins>

Provided you use the same installation directory and username in the 6.1 release as in the 6.0 release, when you start the web server, a backup directory containing the previous release's database is automatically created in `/opt/cariden/etc/collector/server/db-persistence`. Also when you start the web server, database upgrades occur automatically. Since the installation process automatically starts this server, the backup directory creation and the database upgrade both occur automatically.

<ins>Different Installation Directory</ins>

If you do not use the same installation directory in 6.0 and 6.1, the automatic upgrade does not take effect. To upgrade the Collector server database, follow these steps.

6.0 Pre-requisites (Prior to 6.1 Installation)

1. In the 6.0 Collector UI, Settings page, save the 6.0 configuration. This is saved in the `<6.0_installation_directory>/etc/collector/server/configs` directory.

2. Close, the browser, and stop the web server.

   ```
   embedded_web_server –action stop
   ```

3. If it is running, stop the mld server.

   ```
   mld –action stop
   ```

Post 6.1 Installation

1. If the backup directory in the 6.1 directory structure does not exist, create it.

   ```
   cd <6.1_installation_directory>/etc/collector/server/db-persistence
   mkdir backup
   cd backup
   mkdir 6.0.<#> (example, 6.0.4)
   ```

2. Copy the 6.0 `DiscoveryEngineImplementation.db` file to the 6.1 **backup** directory.

   ```
   cp <6.0_installation_directory>/etc/collector/server/db-
   persistence/DiscoveryEngineImplementation.db
   <6.1_installation_directory>/etc/collector/server/db-
   persistence/backup/6.0.<#>
   ```

   Example:

   ```
   cp /opt/acme/etc/collector/server/db-
   persistence/DiscoveryEngineImplementation.db
   /opt/cariden/etc/collector/server/db-persistence/backup/6.0.4/
   DiscoveryEngineImplementation.db
   ```

3. If the `<6.1_installation_directory>/etc/collector/server/configs` does not exist, create it.

   ```
   cd <6.1_installation_directory>/etc/collector/server>
   mkdir configs
   ```

4. Copy the 6.0 configuration file that you saved in the pre-requisite steps to the 6.1 configs directory.

   ```
   cp <6.0_installation_directory>/etc/collector/server/configs/<config_file>.db
   <6.1_installation_directory>/etc/collector/server/configs
   ```

   Example:
   ```
   cp /opt/acme/etc/collector/server/configs/11-08-14.db
   /opt/cariden/etc/collector/server/configs
   ```

5. From the 6.1 Collector UI, Collector Settings->Configuration page, load the configuration file that was copied to the `<6.1_installation_directory>/etc/collector/server/configs` directory in step 4.

6. Review the changes in the UI and once you have confirmed they are acceptable, click Apply on each Setup page.

Failed Upgrades

If an upgrade fails, follow these steps.

1. Use the 6.1 Collector UI, Settings->Configuration page to reset all configurations.

2. Manually re-configure the Collector server through the Collector UI.

Helpful Hint: It is useful practice to save configurations. You can do this on the Collector UI, Settings->Configuration page.

Roll Back the Collector Server

While the following process enables you to roll back the Collector server to one used in the most recent Collector release, it is predicated on you reverting all products to the previous release. For instance, the MATE Live datastore is affected, amongst other files and symbolic links. For assistance with the complete product rollback process, contact your support representative. **These instructions are only for rolling back the Collector server**.

Rollbacks are supported between 6.1 and 6.0, and between 6.1 and the 6.0.# maintenance releases. Throughout this rollback section, any references to 6.0 could be substituted for a 6.0 maintenance release, such as 6.0.4.

- If you use a different installation directory in 6.0 and 6.1, these points are applicable.

   o If 6.0 were maintained, there is no need to roll back the database because it will have been preserved.

   o If 6.0 were not maintained, but you have preserved the 6.0 `$CARIDEN_ROOT/etc/collector/server/db-persistence/DiscoveryEngineImplementation.db` file, follow the steps below and copy this file in step 6. If you followed the steps outlined in the Upgrade the Collector Database section, you will have created a copy of this file.

   o If 6.0 were not maintained and you have not preserved a copy of the database file, then you cannot roll back the Collector server to 6.0. (You can install 6.0, but you have to reconfigure the Collector server.)

- If you use the same installation directory in 6.0 and 6.1, a backup directory is automatically created in `<installation_directory>/etc/collector/server/db-persistence` when the web server is started. That backup directory is used in the following steps.

Note: You must have appropriate read/write permissions. These permissions might have changed if you installed with a different username in 6.1 than in 6.0.

1. In 6.1, if stop the Continuous Poller server if it is running.

   ```
   service wae-collector stop
   ```

2. In the 6.1 Collector UI, stop the collection process by clicking Stop on the Collection->Schedule page.

3. Close the browser, and stop the 6.1 version of the Collector server.

   ```
   service wae-web-server stop
   ```

4. Remove files from the `<installation_directory>/data/collector/server/file-persistence` directory. If you used different installation directories in 6.0 and 6.1, remove this from the 6.0 version.

   Example:

   ```
   cd /opt/cariden/data/collector/server/file-persistence
   rm *
   ```

5. Remove files and directories from the `<installation_directory>/data/collector/server/snapshots` directory. If you used different installation directories in 6.0 and 6.1, remove this from the 6.0 version.

   Example:

   ```
   cd /opt/cariden/data/collector/server/snapshots
   rm -rf *
   ```

6. This step assumes you are using the backup directory created in the upgrade process. You could also use a manually saved the 6.0 `DiscoveryEngineImplementation.db` file.

   Copy the backup database file to `<installation_directory>/etc/collector/server/db-persistence`.

   ```
   cp <installation_directory>/etc/collector/server/db-
   persistence/backup/6.0.<#>/DiscoveryEngineImplementation.db
   <installation_directory>/collector/server/db-persistence
   ```

   Example (installation in same directory)**:** `cp /opt/cariden/etc/collector/server/db-persistence/backup/6.0.3/DiscoveryEngineImplementation.db /opt/cariden/etc/collector/server/db-persistence`

Example (installation in different directories): `cp /6.1_opt/acme/etc/collector/server/db-persistence/backup/6.0.4/DiscoveryEngineImplementation.db /6.0_opt/foo/etc/collector/server/db-persistence`

7. If 6.0 and 6.1 used the same installation directory, re-install the 6.0 version to make it the active software version.

8. Start the 6.0 version of the Collector server.

    `embedded_web_server -action start`

9. Reschedule and restart the collection process from the 6.0 Collection->Schedule page.

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