Unified CCX Failover

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Automatic Call Distribution (ACD)

The HA failure of the active server is detected and the ACD subsystem can automatically fail over from the active to the standby server. All ACD functions are restored on the standby server within 5 seconds.

Interactive Voice Response

When an active server fails in a HA system, IVR subsystem will automatically failover. All calls in queue and calls receiving IVR call treatment will be lost. Calls already transferred to the agent will be preserved.
**Unified CCX Outbound Preview Dialer**

**Behavior Under High Availability**

The CDS is required for normal operation of outbound for call status and call result updates of contact records. When deploying in a 2-nodes high availability system, the CDS must be running on both nodes to enable the database write operation. If the Publisher database is down, then the Outbound Subsystem will not be operational.

The following events occur during a failover:

- If a preview call not in reserved state is waiting for the agent to accept the call and when the master engine goes down, the agent is automatically logged out and the preview call disappears from the agent desktop. If the master engine restarts during failover, the call status for that contact record is set to unknown. If the master engine does not restart during failover, the contact is called when the campaign starts and there are available agents.

- If a preview call not in reserved state is accepted by the agent and the call is ringing on the customer phone, there is no change on the call. However, the agent is logged off and will be able to use call control capabilities only through the phone. When deploying outbound in a high availability environment, only the dialer in the master node is active.

**Engine Redundancy**

Any incoming call arriving at Unified Communications Manager destined for Unified CCX route points can be accepted by the Unified CCX engine and all Unified CCX call treatment and ACD routing services are operational. Automatically logging on large numbers of agents may take up to one minute.

During failover, ACD subsystem will not be able to route calls to agents until the automatic login process completes and the agent manually sets the state to Ready. Agents on Unified CCX routed calls will see those calls survive and CAD will automatically re-login agents back within one minute, and they will see a visual indicator that a failover has occurred. After being logged back in, agents will have to set the state to Ready when they are ready to begin receiving calls.

IP Phone Agent (IPPA) takes more than one minute to failover in general, however in case of network outages, there may be additional timeouts involved. Agents using IPPA will need to manually log in to the new master Unified CCX Engine server.

**WAN Link Failure Between Sites—IIsland Mode**

Connectivity failure creates a scenario called 'Island mode' where each node (on either side of the network) assumes mastership and handles calls. Each node behaves as if the other side has failed and declares itself master (Engine and Data Stores components). The node that was already the master, continues as is. Phones and CAD/CSD need to register with the Engine and Unified Communications Manager pair on the same side of the network. This operation happens automatically. The following lists the failover behaviors:

- Historical data is written to local Data Stores
- Real Time Reporting (RTR) shows the status of each node independently
• No configuration changes are allowed
• Enterprise Database access across the network is not possible
• Outbound will be impaired as these do not support high availability

If the Island mode occurs for more than four days, DB replication between the nodes will be broken and will need to be reestablished from Unified CCX Administration web interface when the WAN link is restored.

Backup scripts are executed on the publisher, and it backs up the database that has mastership. In Island mode, only one node gets backed up and the data getting collected on the other node does not get backed up. The backup is inconsistent, and if restored, there will be loss of data.

**When Connectivity is Restored**

Once the network connectivity is restored, convergence of engine mastership occurs. Two masters cannot exist and one of the nodes will drop mastership. All active calls being handled by that node will be dropped. Similarly, convergence happens for the data stores with no disruption in call activity. All data will be replicated as soon as convergence is done only if the link was up within a predetermined replication retention period, otherwise, the customer needs to initialize the replication from datastore control center pages.

You can use the Unified CCX Administration Datastore control center pages or the CLI to check the replication status.

**When the Master Engine is Down**

Once the master engine goes down, the engine on the other node will be selected as the new master. Calls which were queued by the previous primary engine are dropped after a failover. New calls coming in while agents are re-logging will stay in the queue until agents log in. Historical data will be written to the new master engine’s local database.

**WAN Link and Single Engine Failure**

When the WAN goes down, CTI functionality, which was provided by Unified CM Sub 1 across the WAN is no longer available. The master engine on node 2 fails over to Unified Communications Manager Sub 2. All calls still in the queue are dropped.

Some agents will remain in Not Ready state since the corresponding agent’s phones are registered with the Unified Communications Manager Sub 1. There is no automatic function to force phones to re-register.

This situation is corrected when the WAN link is restored.
## Extend and Connect Failover

The following table describes the persistent connection call behavior during the failover of Unified CCX and Cisco Unified Communications Manager.

<table>
<thead>
<tr>
<th>Failover</th>
<th>Cisco Agent Desktop</th>
<th>Cisco Finesse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Persistent Connection Call</td>
<td>ICD Call</td>
</tr>
<tr>
<td>Unified CCX failover</td>
<td>Not terminated</td>
<td>Not terminated</td>
</tr>
<tr>
<td>Cisco Unified Communications Manager failover</td>
<td>Terminated. This message appears: Agent device is out of service. The agent enters the Not Ready state</td>
<td>ICD call is not terminated. This message appears: Agent device is out of service. The agent enters the Not Ready state</td>
</tr>
<tr>
<td>Desktop connectivity loss</td>
<td>Terminated and reestablished after the desktop connection is restored</td>
<td>Terminated. When you reconnect, the persistent connection call is reestablished</td>
</tr>
</tbody>
</table>

## Cisco Finesse High Availability Considerations

This section describes Cisco Finesse operations during the failover of Unified CCX.

### Smart Failover

Cisco Finesse clients do not complete redirection to the other server unless they confirm that Cisco Finesse is IN_SERVICE on the other server. If the failed side recovers by that time, the clients automatically reconnect to it.

### Failure Scenarios in HA Deployment

This table describes failure scenarios that you might encounter in high availability deployment.
## Cisco Unified Intelligence Center High Availability Considerations

### Server is Down
In a two-node high availability (HA) setup, you can connect to any node to access reports. If the node you are connected to goes down, then manually log in to the other node to access reports as this doesn't happen automatically.

### Island Mode
If WAN is down, the nodes function in Island mode and both of the nodes independently assume mastership (engine and data stores components). You can access reports from either of the nodes.

<table>
<thead>
<tr>
<th>Failure scenario</th>
<th>Failover</th>
<th>What happens to Unified CCX?</th>
<th>What happens to Cisco Finesse Site A?</th>
<th>What happens to Cisco Finesse Site B?</th>
<th>Cisco Finesse client behavior</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity between Site A and Site B is broken (Island mode).</td>
<td>No</td>
<td>Both Site A and Site B become master.</td>
<td>IN_SERVICE</td>
<td>IN_SERVICE</td>
<td>Clients can connect and operate with both sites.</td>
<td>After the connectivity is reestablished, Unified CCX converges on the primary node as master. Clients connected to nonmaster node are redirected.</td>
</tr>
<tr>
<td>Active node is down (Site A).</td>
<td>Yes</td>
<td>Site B will be the master.</td>
<td>OUT_OF_SERVICE</td>
<td>IN_SERVICE</td>
<td>Clients can connect and operate with Site B.</td>
<td>After the connectivity is reestablished, the primary node will be the master. Clients connected to Site B node are redirected to Site A.</td>
</tr>
</tbody>
</table>
Live Data Gadgets Failover in Cisco Unified Contact Center Express

This section describes Live Data Gadget behavior in Unified CCX when different services fail.

Unified Intelligence Service Failure
When Unified Intelligence Center Service is down, an error message is displayed. After the Unified Intelligence Center is back in service, the server responds to client requests in 1 to 3 minutes.

Notification Service Failure
If Notification Service fails, gadgets will fail over from the primary server to the secondary server.

Network Connectivity Failure
If network connectivity fails, Cisco Finesse desktop will fail over from the primary server to the secondary server.

Web Chat for Agent and Supervisor
With high availability, failure of the active server can be detected and the Web Chat subsystem automatically fails over from the active server to the standby server. All unanswered chats are moved to the new active server.

All logged-in agents are logged out and redirected to the new active server, where they need to log in again. An active chat session is not terminated in Cisco Agent Desktop; however, the agent is logged out from the server. After the chat session is over, the agent must log in to the new active server.

Cisco SocialMiner does not support HA deployment options. The fault tolerance for Web Chat is provided in the Unified CCX. In an HA deployment, SocialMiner is configured to communicate with both the Unified CCX nodes. When a new contact arrives at SocialMiner, both the Unified CCX nodes are notified.

In the case of a failover, all queued or unread contacts are reintroduced by SocialMiner into the Unified CCX, and the new master server will queue these contacts and start the allocation. Chat will be unavailable if the SocialMiner is down.

Note
Web Chat does not support the Island mode scenario.