Solr Version 8.7 to 9.3: Major Changes and Required Updates

- **Java Version Requirement:**

  - **8.7:** Required Java 8.
  - **9.0:** Requires Java 11 or higher, tested with Java 17.

- **SolrJ Compatibility:**

  - **8.7:** SolrJ (client library) version 8.7 is compatible.
  - **9.0:** SolrJ version must be upgraded to 8.10 or higher for SolrCloud cluster connections.

- **Cluster State Storage:**

  - **8.7:** Used /clusterstate.json file to store cluster state in Zookeeper.
  - **9.0:** No longer supports /clusterstate.json. Upgrade to new state.json format before upgrading.

- **Query Elevation Component:**

  - **8.7:** Used /data directory for the Query Elevation Component.
  - **9.0:** Move elevation file to the configset folder instead.

- **Metrics Terminology:**

  - **8.7:** Metrics used "master" and "slave" terms.
  - **9.0:** Metrics use "leader" and "follower" terminology. Update monitoring systems.

- **PKI Authentication:**

  - **8.7:** PKI Authentication communication format.
  - **9.0:** New PKI format. Required multiple restart sequence for rolling upgrade.

- **Reindexing After Upgrade:**

  - **8.7:** Allowed adding docValues without re-indexing via UninvertDocValuesMergePolicy.
  - **9.0:** Changes in Lucene 9 make this no longer possible.

- **Solr 9.2: Upgrade to Jetty 10.x:**

  - **9.0:** Upgraded Jetty to version 10.x.

- **Security and Authentication:**

  - **8.7:** Various changes in security settings.
  - **9.0:** Introduced new Certificate Authentication Plugin, improved PKI Authentication, and other security enhancements.

- **Docker Image Changes:**

  - **8.7:** Customization options SOLR_DOWNLOAD_URL, etc., in Dockerfile.
  - **9.0:** Changed customization, use SOLR_DOWNLOAD_SERVER.

- **Solr Modules:**

  - **8.7:** Contrib modules.
  - **9.0:** Renamed to "modules". Enable via SOLR_MODULES environment variable.

- **SolrJ Changes:**

  - **8.7:** Changes in CloudSolrClient.
  - **9.0:** Supports HTTP2, has a new builder.

- **Solr Backups:**

  - **8.7:** Backup response format.
  - **9.0:** Async backups return information in a map.

- **Logging and Metrics:**

  - **8.7:** Metrics handler dependencies.
  - **9.0:** Metrics handler only depends on SolrJ, changes in metrics logging.

- **Solr 9.3: Shard Management API, Solr CLI, Security:**

  - **9.0:** Introduced "Install Shard" API, changes in Solr CLI, security improvements.

These changes affect various aspects like authentication, security, cluster state management, Java version requirements, and Docker images. To upgrade,

review the detailed documentation provided for each version, make necessary code/configuration changes, and consider reindexing for best results. Always ensure compatibility of third-party components and services before upgrading.