同步ES数据到Clickhouse - JAVA

通过logstash的额外插件 https://github.com/funcmike/logstash-output-clickhouse

参考：https://www.modb.pro/db/380071

最终方案：编写自定义Flink Clickhouse Sink

```
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/**
  * Clickhouse Sink
  * alarms insert/update count/update state
  * alarm_detail insert
  */
class ClickhouseSink extends RichSinkFunction[AlarmRequest] with Lazing {

    private val logger = LoggerFactory.getLogger(getClass)

    lazy val url: String = props.getProperty("ck.url")
    lazy val batchSize: Int = props.getProperty("ck.bulk.size", "1000").toInt
    lazy val batchInterval: Long =
Duration(props.getProperty("ck.bulk.interval", "10 seconds")).toMillis
    lazy val ckUpdateEnable: Boolean = props.getProperty("ck.update.enable",
"true").toBoolean

    var curSize = 0
    var curBulkTime: Long = DateTime.now.getMillis
    var bulkTimer: java.util.Timer = _

    // 连接池和Statement变量
    var dataSource: ClickHouseDataSource = _
    var statement: ClickHouseStatement = _
    var conn: ClickHouseConnection = _

    @Override
    override def open(parameters: Configuration): Unit = {
        val properties = new Properties()
        properties.setProperty("user", props.getProperty("ck.usr", "default"))
        properties.setProperty("password", props.getProperty("ck.pwd", ""))
        dataSource = new ClickHouseDataSource(url, properties)
    }

    ... ...
    override def invoke(t: AlarmRequest): Unit = {
        try {
            if (ckUpdateEnable) {
                // 更新（旧表）逻辑
                AlarmState(t.alarm.state) match {
                    case AlarmState.Creation =>
                        createIndexRequest(t)
                    case AlarmState.CountUpgrade | AlarmState.LevelUpgrade =>
                        updateIndexRequest(t)
                    case AlarmState.AutoElimination | AlarmState.ManElimination
| AlarmState.EliminationToConfirmed =>
                        updateEliminationIndexRequest(t)
                }
            } else {
                fullInsertRequest(t)
            }
        } catch {
            case ex: Exception =>
                logger.warn(s"[CKSink] invoke error: $ex")
        }
    }

    def prepareStatement(): Unit = {
        if (statement == null) {
            conn = dataSource.getConnection
            statement = conn.createStatement()
            curBulkTime = DateTime.now.getMillis
        }
    }
    。。。

    def createIndexRequest(req: AlarmRequest): Unit = {
        prepareStatement()
        val sql = req.sqlInsert()
        logger.info(sql)
        statement.addBatch(sql)
        statement.addBatch(req.sqlInsertDetail())
        updateBulk()
    }
    。。。

    def execute(): Unit = this.synchronized {
        try {
            if (statement != null) {
                val res = statement.executeBatch()
                logger.info(s"[CKSink] execute batch effects: ${res.length}")
            }
        }
        finally {
            clearStatement()
        }
    }
}
```

同步ES数据到Clickhouse -GO

编写go代码：

> goland安装不上go1.18?
>
> 现在本地sdk后修改 C:\go1.18\src\runtime\internal\sys

```
// Code generated by go tool dist; DO NOT EDIT.

package sys

const StackGuardMultiplierDefault = 1

const TheVersion = `go1.18.6`
```

使用 Clickhouse-go 开发库https://github.com/ClickHouse/clickhouse-go。

```
func example() error {
    var (
        ctx       = context.Background()
        conn, err = clickhouse.Open(&clickhouse.Options{
            Addr: []string{"10.8.30.71:30900"},
            Auth: clickhouse.Auth{
                Database: "default",
                Username: "default",
                Password: "",
            },
            //Debug:           true,
            DialTimeout:     time.Second,
            MaxOpenConns:    10,
            MaxIdleConns:    5,
            ConnMaxLifetime: time.Hour,
        })
    )
    if err != nil {
        return err
    }
    if err := conn.Exec(ctx, `DROP TABLE IF EXISTS example`); err != nil {
        return err
    }
    err = conn.Exec(ctx, `
        CREATE TABLE IF NOT EXISTS example (
              Col1 UInt8
            , Col2 String
            , Col3 FixedString(3)
            , Col4 UUID
            , Col5 Map(String, UInt8)
            , Col6 Array(String)
            , Col7 Tuple(String, UInt8, Array(Map(String, String)))
            , Col8 DateTime
        ) Engine = Memory
    `)
    if err != nil {
        return err
    }

    batch, err := conn.PrepareBatch(ctx, "INSERT INTO example")
    if err != nil {
        return err
    }
    for i := 0; i < 500_000; i++ {
        err := batch.Append(
            uint8(42),
            "ClickHouse", "Inc",
            uuid.New(),
            map[string]uint8{"key": 1},             // Map(String, UInt8)
            []string{"Q", "W", "E", "R", "T", "Y"}, // Array(String)
            []interface{}{ // Tuple(String, UInt8, Array(Map(String, String)))
                "String Value", uint8(5), []map[string]string{
                    map[string]string{"key": "value"},
                    map[string]string{"key": "value"},
                    map[string]string{"key": "value"},
                },
            },
            time.Now(),
        )
        if err != nil {
            return err
        }
    }
    return batch.Send()
}
```