Access Operators

Extending the framework

AccessAO, AccessAOBuilder ¿ PQL Documentation
GenericPush and GenericPull
New Wrapper

Transport Handler

A Transport Handler is responsible for the communication between an arbitrary source or sink and Odysseus. Multiple Transport Handlers already exists in Odysseus and are documented here. They also serve as a good starting point for own Transport Handler.

Push

To implement a Push Transport Handler (a transport handler that receives data instead of requests) an *AbstractPushTransportHandler* has to be extended. Only a few methods have to be implemented like the *send* method that transfers data to source or target of the transport, the *getName* method which returns the unique name of this transport handler, and the create instance method which creates a new instance of this transport handler with the given options. Further, ones has to implement the process open and process close methods. These methods are used to open or close the transport channel depending on the exchange pattern of the transport handler. There are 8 possible transport pattern based on the Message Exchange Pattern (MEP) namely they are: InOnly, RobustInOnly, InOut, InOptionalOut, OutOnly, RobustOutOnly, OutIn, and OutOptionalIn.

Example Push Transport Handler

```
public class ExampleTransportHandler extends AbstractPushTransportHandler {
    /** Logger */
    private Logger LOG = LoggerFactory.getLogger(ExampleTransportHandler.class);

    public ExampleTransportHandler() {
        super();
    }
    public ExampleTransportHandler(IProtocolHandler<?> protocolHandler) {
        super(protocolHandler);
    }
    @Override
    public void send(byte[] message) throws IOException {

    }
    @Override
    public ITransportHandler createInstance(
            IProtocolHandler<?> protocolHandler, Map<String, String> options) {
        ExampleTransportHandler handler = new ExampleTransportHandler(
                protocolHandler);
        // Set options
        return handler;
    }

    @Override
    public String getName() {
        return "Example";
    }
    @Override
    public void processInOpen() throws IOException {

    }
    @Override
    public void processOutOpen() throws IOException {

    }
    @Override
    public void processInClose() throws IOException {

    }
    @Override
    public void processOutClose() throws IOException {

    }
    @Override
    public ITransportExchangePattern getExchangePattern() {
        return ITransportExchangePattern.InOnly;
    }
```

Pull

The implementation of a Pull Transport Handler is similar to the Push Transport Handler except the fact that ones has to implement the two methods getInputStream and getOutputStream that are used by a protocol handler to request the next data element.

Example Pull Transport Handler

```
public class ExampleTransportHandler extends AbstractPullTransportHandler {
    /** Logger */
    private Logger LOG = LoggerFactory.getLogger(ExampleTransportHandler.class);
    private InputStream in;
    private outputStrem out;
    public ExampleTransportHandler() {
        super();
    }
    public ExampleTransportHandler(IProtocolHandler<?> protocolHandler) {
        super(protocolHandler);
    }
    @Override
    public void send(byte[] message) throws IOException {

    }
    @Override
    public ITransportHandler createInstance(
            IProtocolHandler<?> protocolHandler, Map<String, String> options) {
        SpeechTransportHandler handler = new SpeechTransportHandler(
                protocolHandler);
        // Set options
        return handler;
    }

    @Override
    public String getName() {
        return "Example";
    }
    @Override
    public void processInOpen() throws IOException {

    }
    @Override
    public void processOutOpen() throws IOException {

    }
    @Override
    public void processInClose() throws IOException {

    }
    @Override
    public void processOutClose() throws IOException {

    }
    @Override
    public InputStream getInputStream() {
        return in;
    }
    @Override
    public OutputStream getOutputStream() {
        return out;
    }
    @Override
    public ITransportExchangePattern getExchangePattern() {
        return ITransportExchangePattern.InOnly;
    }
```

Protocol Handler

A Protocol Handler is responsible for the conversion between an arbitrary data model and the Odysseus data model. Multiple Protocol Handlers already exists in Odysseus and are documented here. They also serve as a good starting point for own Protocol Handler.

To implement a Protocol Handler an *AbstractProtocolHandler* has to be extended. A few method has to be implemented here. First of all the method *getName* has to be implemented that returns the unique name of the Protocol Handler. After that, the method *createInstance* need to be implemented to create a new instance of the Protocol Handler with the given options. By the fact, that a Protocol Handler can be used in a pull and a push fashion, the methods *hasNext* and *getNext* for pull access and *process* for push access have both to be implemented to read data using the data handler and forward the data to the transfer. In addition, the method *write* has to be implemented to write data. Further, the methods *open* and *close* to open and close the Transport Handler and initialize or shutdown the the source/sink should be implemented. Other methods like the *onConnect* and *onDisconnect*can can be implemented to treat events in the transport channel adequately. Depending on the applications ones want to override the methods *getExchangePattern* to define the supported exchange pattern for the transport direction (int or out) and access (push or pull).

Protocol Handler

```
public class ExampleProtocolHandler<T> extends AbstractProtocolHandler<T> {

    public ExampleProtocolHandler() {
        super();
    }
    public ExampleProtocolHandler(ITransportDirection direction,
            IAccessPattern access) {
        super(direction, access);
    }
    @Override
    public void open() throws UnknownHostException, IOException {
        getTransportHandler().open();
    }
    @Override
    public void close() throws IOException {
        getTransportHandler().close();
    }
    @Override
    public boolean hasNext() throws IOException {
        return true;
    }
    @Override
    public T getNext() throws IOException {
        return getDataHandler().readData("data");
    }
    @Override
    public void write(T object) throws IOException {

    }
    @Override
    public IProtocolHandler<T> createInstance(ITransportDirection direction,
            IAccessPattern access, Map<String, String> options,
            IDataHandler<T> dataHandler, ITransferHandler<T> transfer) {
        ExampleProtocolHandler<T> instance = new ExampleProtocolHandler<T>(direction,
                access);
        instance.setDataHandler(dataHandler);
        instance.setTransfer(transfer);
        // Set options
        return instance;
    }
    @Override
    public String getName() {
        return "Example";
    }
    @Override
    public void onConnect(ITransportHandler caller) {

    }
    @Override
    public void onDisonnect(ITransportHandler caller) {

    }
    @Override
    public void process(ByteBuffer message) {
        getTransfer().transfer(getDataHandler().readData(message));
    }
}
```