MasterScope

JobCenter
Batch Job Management Software

November, 2015

NEC Corporation,
Cloud Platform Division,
MasterScope Group
NEC brings together and integrates technology and expertise to create the ICT-enabled society of tomorrow.

We collaborate closely with partners and customers around the world, orchestrating each project to ensure all its parts are fine-tuned to local needs.

Every day, our innovative solutions for society contribute to greater safety, security, efficiency and equality, and enable people to live brighter lives.
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1. Product Overview
MasterScope is a series of Integrated System Management Software products which enables simple operation and supports in controlling the whole IT system.

- **Implement 2K+ systems/year**
- **Simple installation and Operability**
- **Rich functionality**

### Corporate Management
- Unified Management
  - Service level management
  - IT asset management
  - IT Security management

### MISSION CRITICAL OPERATIONS
- Invariant Analyzer
- AssetSuite
- SECUREMASTER

### Operation Management
- Batch Job Management
  - Software Deployment
  - Platform management
  - Backup

  - **JobCenter**
  - DeploymentManager
  - SigmaSystemCenter
  - NetBackup

### System Management
- Server Management
  - Network Management
  - Storage Management
  - Application Management

  - **SystemManager**
  - Network Manager
  - iStorageManager
  - Application Navigator

MasterScope JobCenter is a job management tool that automatically runs routine jobs and batch processing, and enables accurate and efficient system operation.
Frequent Issues on System Operation

Human-operated job management often causes unexpected system failures and increases business impacts.

As the system expands, transactions increases accordingly → Operation workload increases as well

Human-operated job management often makes mistakes

Even though there are standard tools bundled with OS, it usually gets too complex as they need a lot of settings

Cannot make sure if batch command finished successfully or not

Even though there are standard tools bundled with OS, it usually gets too complex as they need a lot of settings

Oh, I can’t modify any more...

Up to which process it has finished?
I don’t know which process has failed!?
Cannot finish in time!!

Cannot remember if that has finished... or not
Ah, I got the wrong order!
Forgot to run the batch process....
Introducing Job management tool, which automates routine processes and enables accurate and efficient system operations.

- Automate routine processes by job management tool to decrease workload.
- According to schedule and flow, accurately execute job processes.
- Job execution status can be managed at a glance and bottlenecks can be easily located.
- It’s easy to see in which process errors have occurred.
- Can be easily changed and managed by various process parts.
- Can solve procedure mistakes.
- There are many parts pre-set, it’s easy to change/manage.

JobCenter Mgmt

Transaction flow

日次処理

週次処理

月次処理

不定期処理

Daily

Weekly

Monthly

Irregular
2. Advantages
MasterScope JobCenter is a job management tool that automates customer’s business securely, supports the whole system life cycle from implementation, daily operation and job monitoring to improvement.

**What is MasterScope JobCenter?**

**Implementation**
- Create job network
- Create schedule
- Report configuration Info and setting info.

**Operation**
- Jobs monitoring, execution
- Changeable schedule
- Operations history

**Design, Implementation**
- Replace job definitions at one time
- Analyze job execution history
MasterScope JobCenter Advantages

- MasterScope JobCenter is a reliable product in terms of functions, customer base and as well as its reasonable price.

- Rich and Easy-to-Use Functions
- Multi Platform Supported
- Reasonable Price

Large Customer Base
Advantages 1. Rich and Easy-to-Use Functions

Provides rich and easy-to-use functions required for job management, which allow efficient operation from defining job flow and schedule to daily operations.

Create job flow

Monitor execution status

Overall

Drill down to see further info.

Job flow

Detailed log

Manage schedule

A lot of pre-set rule options to manage schedule

Other rich functions

- User rights mgmt.
- Operation log
- Excel define
- Execution analysis
- Reporting
- Queue control
- Calendar
- e-mail alert
- ERP linkage
- AD linkage
- Cluster supported
- etc.
Advantages 2. Multi Platform Supported

Even if there are various OS, Virtual software, and cluster software used in the distributed system, it is able to unify and flexibly control/monitor job execution. Supported Language: Japanese, English, Chinese.

- Supports various OS
- Supports Unified management of environment with various OS (Windows, Linux, Unix)
- ◎ Supports various kinds of HA clustering software (CLUSTERPRO, MSFC, ServiceGuard etc.)
- ◎ Also supports major hypervisors such as vSphere or Hyper-V.

Even if there are various OS, Virtual software, and cluster software used in the distributed system, it is able to unify and flexibly control/monitor job execution. Supported Language: Japanese, English, Chinese.
Advantages 3. Reasonable Price

MasterScope JobCenter is offered at a reasonable price, for both physical environment and virtual environment. Also, since its price is defined based on machine rank (JobCenter call it ‘Tier’), so if the number of CPU/Core increases, the price is still the same (if the Tier is the same).

- **Physical Environment**
  - When operating with 5 Windows servers
  - CL/Win ×5
  - SV
  - SV
  - SV
  - SV
  - SV

- **Virtual Environment**
  - When 2 cores are allocated to virtual servers
  - CL/Win ×5
  - ESX Xeon 5606 (4 cores) × 2
  - VM
  - VM
  - SV
  - SV
  - SV
  - VM
  - VM

- **Notice** Information described in this page is based on NEC’s investigation on the internet and we do not 100% guarantee that all these information is correct and latest.
Advantages 4. Large Customer Base

Since its first release in 1994, JobCenter has been accepted by many customers from various industries and has been introduced to a broad range of systems ranging from mid-small sized systems to large-scaled mission critical systems in large enterprises.

**Major Customers**

- **Telecom Carrier**
  - NTT Docomo

- **Finance**
  - Mitsui Sumitomo Bank

- **Manufacturing**
  - Asahi Beer

- **Medical retail**
  - Toho Pharmaceutical

**OEM to HP**

HP OEM’s JobCenter as job scheduling product of HP Software series since April 2004. They appraise JobCenter in terms of performance and functionality.
3. Operation Steps
MasterScope JobCenter: Simple 3 Steps to Use

MasterScope JobCenter automates routine operations quickly and accurately by performing simple 3 steps.

Step. 1
Create Job Network

Step. 2
Set up Schedule

Step. 3
Automated Operation & Monitoring

In addition to these, MasterScope JobCenter also offers “Appropriate functions that support various operations”
1. Create Job Network

Just drag and drop to create job network according to the operation.

① Open the window and create a new job network

② Drag and drop objects(parts) to create flow

③ Right-click to write script or configure parameters

④ With various kinds of job parts, it's very easy to create complex flow.

** In this material, “job network” means “workflow of batch job operation”
2. Set up Calendar/Schedule

- Define the date/time of job execution by creating operation calendar/schedule.
- Then link with the job network made in the previous step to automatically execute jobs.

1. Create a basic calendar which defines operation day and holiday. (Without calendar, it is also possible to set up schedule)

2. Create schedule to set up execution rule, such as,
   - from 9:00 on every Thursday or
   - from 22:00 of the last day of every month

3. Link with the predefined job network and start operation
3. Monitor Job Network Execution Status

- Tracker function displays processes of the executed job network and their results, as well as planned job network.
- Operation such as re-execution or skipping random job also can be performed through the same window.

◆ Tracker List

The job status are distinguished by colors and labels, enabling errors to be recognized easily.

When error occurs, it is also possible to confirm where the error has happened, in detail.

Possible to operate by right clicking

Possible to confirm detailed information
3. Monitor Job Network Execution Status (via Web Browser)

Execution state monitoring, immediate job network submission, and parameter checking can be done through a Web browser. (CL/Web option)

- Easy-to-use, same as traditional CL/Win(client GUI), just right-click to skip, re-execute etc.
- Just like CL/Win(client GUI), CL/Web displays the job flow graphically.
4. Analyze Execution Status

Using excel, it is possible to tally up number of executed jobs and analyze delayed time.

E.g. Relationship between delayed time of jobs and number of executed jobs

By visualizing the frequency of delay of jobs, it is possible to revise the schedule efficiently.
5. Edit Job Network Definition by Excel (Option)

Using excel, it is possible to edit job network definition, schedule and calendar.

With error check function and default functions of excel, it is easier to define job networks.
5. Export Definition Information to Excel File

It is possible to export definition information of set job network or calendar to excel file, users can use them for system design document.

◆ Example of exported detailed information of job network
◆ Example of exported parameters by users
4. Functions
"Execution Control Parts" (control transaction flows)

MasterScope JobCenter offers various convenient execution controlling parts such as condition branch, continuity, parallel, dialog, etc., to create job flows easily.

1. **Unit job**
   Change the job network flow according to the exit code of a unit job or sub JNW.

2. **Execute SAP command directly**

3. **Start SVF module**

4. **Start WebOTX BatchServer**

5. **Hierarchical job network** (Sub Job network)

6. **Dialog**
   Waits for a response from the operator.

7. **Condition branch**
   Execute several jobs or sub job networks.

8. **Calendar branch**
   Select an execution flow according to the date.

9. **Parallel**
   The subsequent parts will be executed when one of the multiple branch flows finishes.

10. **OR branch**
    The subsequent parts will be executed when one of the multiple branch flows finishes.

11. **Continuity**
    Jumps to the pre-specified unit job, and re-execute the process after that job executes.

※JobCenter calls “sequence of jobs” as “job network”
※_ indicates option functions
Create job network

"Waiting Control Parts" (enables to synchronize jobs at random point)

Using waiting control parts (file waiting, time waiting, event waiting) enables to make jobs wait and start at random point.

- File waiting: Wait for a specified file to be created, deleted or updated.
- Job waiting: Wait till end of a specified job.
- Time waiting: Wait for a specified time to be reached.
- Event transmission/reception: Transmit/receive an event from/at one job network to/from another job network.
"Schedule Function" (enables flexible scheduling by combining multiple rules)

Flexibly and simply set various operation’s execution schedule, required in business systems by combining multiple rules.

Create schedule

Instinctively confirm operation day and non-operation day

Create flexible schedule by combining multiple rules

You can also set rules such as “execute in xx minutes interval”, or “execute on the last day of a month”.

Flexibly add new rules on every week, every month, specific day of the week etc. Besides, if the day is a holiday, the operation can be automatically shift to previous or following day.

Newly added interval day rule. It is possible to execute on every xx days.

R12.10 new
"Calendar Function" (helps operation being conscious of operating / non-operating day)

Calendar function defines operating/non-operating days of jobs. Using schedule function, shift job execution to previous / following day, if the set date is a holiday.

Operating day : Black
Non-operating day : Red

You can also set time zone so that you don’t have to worry about time difference.

Set rule to easily register operation day and non-operation day

1. Create Calendar
2. Create Schedule
3. Complete exec. schedule

- Every Mondays 12:00
  - Export Report
  - Backup
- Every Wednesdays 9:00
  - Replace master file

Rule exception date (Holiday Shift)

Inherit the setting set in calendar and execute job on the following day

Job network operating day (Holiday Shift(following day) )
"Reporting function (ReportHelper)" (generates report of setting info. in excel file)

ReportHelper helps to generate report of configuration or definition information such as created job network or schedule in excel format.

Available reports:
- Definition information
  - Job network list
  - Details of job network
  - Job network flow chart
  - Schedule list
  - Calendar list
- Config. Information
  - Queue setting
  - NQS setting
  - User environment setting
  - System environment setting
  - Permission setting
  - Machine list
  - Machine group

*This function only offers referencing function. Definition Helper (Option license) is required to edit JNW using excel.

Editing in excel is easy as compared to documents in other format, such as design document.

It is also possible to output flow chart.

Convenient function

JobCenter Management server

Export setting, definition info.  Import to excel

◆ e.g.1, Details of job network
◆ e.g.2, Schedule list
◆ e.g.3, Job network flow chart
"DefinitionHelper" (makes it easier to edit job networks using excel)

DefinitionHelper helps to edit job network, schedule and calendar all at once using excel.

1. Edit job network

You can use excel for editing job networks simply.

Check if the set parameters are correct on the spot

2. Edit schedule and calendar

Schedule and calendar are also editable

3. Confirm transaction flow

Confirm defined job network in excel without any effort

* Option license is required
After starting operation, execution status of job network can be monitored through “tracker” list. Operation such as re-execution or skipping random job can also be done through the same window.

- **Tracker list can be exported as CSV file as well**

- **Execution results of job network**

- **Example of right-click menu**

- **Detailed log**

You can “skip” any scheduled job, or “re-execute” error job for advanced operation.
Gantt chart shows comparison between estimated time and actual consumed time to execute jobs, enabling visual and instinctive monitoring.

### Gantt chart of each job network

<table>
<thead>
<tr>
<th>Name</th>
<th>02:00</th>
<th>03:00</th>
<th>04:00</th>
<th>05:00</th>
<th>06:00</th>
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<td>DailyAccount</td>
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<td>UnitJnw</td>
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</tr>
</tbody>
</table>

- **Blue (thin line)** indicates estimated time (according to execution history)
- **Green (bold line)** indicates actual time

★ You can also set alert function when jobs consume more time than estimated.
Analyze execution status

“Performance analyzing function (AnalysisHelper)” (supports in improving operations)

AnalysisHelper helps to import and analyze job execution data, accumulated during daily operation for effective operation management.

◆ e.g. 1, Relationship between delayed time and number of executed jobs

As it is pivot table of excel, you can analyze data flexibly

◆ e.g. 2, Number of executed jobs on specific day, by time

There are relatively many jobs between 9:00am-8:00pm. ➔ Operator can consider improving execution schedule

* When there are enormous data to analyze, it may consume a large capacity of disk
** Data analyzing requires memory and CPU, it is recommended to perform analysis on another server
Access rights such as create, refer and execute for each job network can be set in detail for each user, to grant appropriate rights to users.

Create rights group, to manage access rights

Control access for specific users

Flexibly configure user rights such as,
“Only limited job network is available to create/modify”
“Only capable to execute”
"Queue control function" (control the number of concurrent jobs and priority)

Control the number of concurrent jobs, their multiplicity and priority, by setting a queue to each job or job network.

- Queues on each server can be confirmed and set from GUI
- Simply set transfer destination of pipe queue on GUI
- Easily set the number of concurrent jobs

Execution environment

Control the number of concurrent jobs, their multiplicity and priority, by setting a queue to each job or job network.

Job mgmt server

Job exec server

Workload is high → set number of running job as 1

Workload is low → set number of running job as 3
Users can create button that can start any job network by themselves, so that users can start the registered job network at any time from GUI.

① Click button from GUI

② After clicking button, it pops up help window. Click “OK” to start job network.

③ Registered job network will start
Log Exporting Function

Export log history of every client’s operation/job execution for job network. Collaborate with log collecting tool to incorporate internal control (for SOX law).

Get the log information from JobCenter CL/Win
- Term of keeping logs
- Size of logs
- Number of backup file

Operation log
- Record “who”, “when”, “from where”, and “what action” has been done in order to create/modify a job network.

Execution log
- Record “when”, “whose”, “which job network” and “what happened” when a job network starts/stops

Operation from CL/Win
- Operation can be done through GUI

JobCenter CL/Win

Execution of JNW
- Operation from CL/Win

JobCenter MG

Operation log
- 2013/05/29 17:02:26.735(JST),root,testServer,JNW,SampleJNW, create
- 2013/05/29 17:02:42.811(JST),root,testServer,JNW,SampleJNW/JOB1, modify
- 2013/05/29 17:02:44.343(JST),root,testServer,JNW,SampleJNW, modify
- 2013/05/29 17:02:46.093(JST),root,testServer,JNW,SampleJNW, submit
- 2013/05/29 17:02:50.127(JST),root,testServer,TRK,SampleJNW.20130529080246/JOB1, skip

Execution log
- 2013/05/29 17:24:07.353(JST),root,SampleJNW.20130529082407, JNWSTART, ...
- 2013/05/29 17:24:07.353(JST),root,SampleJNW.20130529082407, JNWEND, DONE, ...
- 2013/05/29 17:25:36.082(JST),root,SampleJNW.20130529082535, JNWSTART, ...
- 2013/05/29 17:25:36.527(JST),root,SampleJNW.20130529082535, JNWEND, WDONE, ...
- 2013/05/29 17:25:44.313(JST),root,SampleJNW.20130529082544, JNWSTART, ...
- 2013/05/29 17:25:44.716(JST),root,SampleJNW.20130529082544, JNWEND, EDONE, ...

Get the log information from JobCenter CL/Win
- Term of keeping logs
- Size of logs
- Number of backup file

Execution environment
Layering Job management server in a large distributed environment

Management server can monitor job network on the other machines also, so that you can implement large-scale system by balancing the load, by placing the job definition file over multiple job network.

- Visually understand job execution status in the whole system on GUI
- Centrally manage execution status of distributed management servers
- Appropriately locate and configure job network according to application or schedule
MasterScope JobCenter Merit Summary

- Job management tool (MasterScope JobCenter)
  Accurately and efficiently supports system operations by automating routine jobs (e.g. data gathering) and batch processing, with simple job flows and flexible schedule function.

- MasterScope JobCenter Benefits
  - Efficiently automates operation according to schedule
  - Reduces workload of administrators and operators
  - Enables flexible changes in job flows
  - Explicit and quick notification of execution errors
  - Integrable in multi-platform environment
  - Supports internal control

- MasterScope JobCenter is suitable for customers who...
  - Manually operate order processing using multiple batch files
  - Have many daily/weekly/monthly data summarizing tasks
  - Need to confirm every time to process batch task after updating data file
  - Need batch collaborating platform when system is newly built
  - Want to register procedures of backup/restore that are occasionally used
5. System Requirements and configurations
MasterScope JobCenter offers 3 tier product configuration i.e. operation terminal, manager server and execution server, to flexibly support various size of systems.

**MasterScope JobCenter CL/Win**
- Client GUI to create job and schedule and to confirm execution results.
- Also includes reporting function (Report Helper), analysis function (Analysis Helper)

**MasterScope JobCenter Definition Helper (Option)**
Used to define job network, schedule, and business day calendar in Excel

**MasterScope JobCenter MG**
Installed in manager server, to build job execution environment and to centrally monitor the job execution statuses

**MasterScope JobCenter CL/Web (Option)**  
R13.1New
Used for monitoring through web browser  
* Can be installed to manager server as well

**MasterScope JobCenter SV**
Installed on each server, to execute jobs submitted by MG

**Other Options**
- MasterScope JobCenter CJC Option  ·············· Applied to clustered environment
- MasterScope JobCenter for ERP Option  ··············· Linkage with SAP/ERP
- MasterScope JobCenter for BI Option  ··············· Linkage with BI function of SAP
MasterScope JobCenter Configuration Example 1/2

◆ Configuration Example 1. Basic configuration
- View *1
- Management server *1
- Execution server *5

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Overview</th>
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<tr>
<td>MasterScope JobCenter SV (T0)</td>
<td>1 Execution server ※2</td>
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</table>

※1 MasterScope JobCenter MG includes 5 licenses of CL/Win.
※2 Price of JobCenter SV defers depending on machine rank.
Please consult your regional NEC representative for product availability and ordering information.

◆ Configuration Example 2. Clustered environment + Excel editing
- View (Excel editing) *1
- Management server *2 (Clustered)
- Execution server *5 (Partly clustered)

<table>
<thead>
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<th>Qty</th>
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<tr>
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<tr>
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※2 Price of JobCenter SV defers depending on machine rank.
Please consult your regional NEC representative for product availability and ordering information.
MasterScope JobCenter Configuration Example 2/2

**Configuration Example 3. Excel editing + use web browser**
- View (Excel editing) *1
- Management server and CL/Web server *1
- Execution server *5

**Configuration Example 4. External CL/Web server & Clustered**
- View *1
- Management server *2 (Clustered)
- CL/Web server *2 (Clustered)
- Execution server *5 (Partly clustered)

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<th>Product Name</th>
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※2 Price of JobCenter SV defers depending on machine rank. Please consult your regional NEC representative for product availability and ordering information.
System Requirements

MasterScope JobCenter System Requirements

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JobCenter CL/Web supported browser

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Microsoft Office Excel supported version

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<tr>
<td>Report Helper/Analysis Helper</td>
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</table>

※1 MasterScope JobCenter MG includes 5 licenses of CL/Win.
※2 Price of JobCenter SV defers depending on machine rank.
※3 Version of JobCenter MG and CL/Web should be same
6. Appendix
MasterScope JobCenter is used for automation of the following cases.

1. **Operation automation**
   - Used at automation system operations for gathering and integrating data for daily, weekly, monthly data analysis etc.

2. **Automation of repeated transaction**
   - Used for the real-time processing, such as data transaction in 10 minutes interval rule, or performing a sequential processing in case of repeated files received.

3. **Automation of optional operation**
   - Used at automating optional operation, such as error avoidance processing at the time of trouble, or form issuance by pushing button option.

4. **Automation of backup**
   - Used for maintaining a stationary point, starting of a service after backup and controlling the replication.

5. **Automation power supply management**
   - Used for control of power off order and procedural control of power supply plunge.
Distribution business company A, automated their operations by using MasterScope JobCenter to realize easy functioning and reduce operator’s cost by avoiding the situation of waiting for sales data from each store.

**Issue**

It was necessary to wait for all the data to be received from each store, then confirm and start processing manually. In case when system becomes abnormal, it would take much time for confirmation.

**Result**

Using MasterScope JobCenter to automate operations, reduced misoperations, helped to grasp abnormalities visually, made operations efficient.

If files does not arrive on time, It's possible to give time-out.

While all file's preprocessing is completed normally, begin whole data's tabulation processing.

Possible to confirm visually at the time of an error.
Case Study 2: Quiescent Point For Backup

In order to backup correctly, MasterScope JobCenter retains a quiescent point, show alerts and informs the administrator while backup fails to complete as per the schedule.

Issue

There are still cases where system could not start normally even when stopped by cron, which leads to backup synchronization failure, initiated in the state when data is inconsistent, leading to schedule disparity.

Result

System with multiple servers can be stopped in right manner and also backed-up properly. If backup did not complete by the over-time warning defined, then it would be forcibly terminated, and system will be automatically restarted.

MasterScope JobCenter

Retain a quiescent point before backup

(1) AP server stop
(2) DB server stop
(3) Backup starting
(4) Backup completed
(5) DB server starting
(6) AP server starting

Backup server

When backup does not end as scheduled, It is possible to give alert notification.

It could be used for control of MV/RV copy, separation, mount on server etc. in case of backup by the DDR of iStorage.
1. Unit Job

- A unit job is the smallest component that can be executed as a job.
- From “Script” on the popup menu (write script directly or designate the place where the batch file to be executed exists), to “Parameter” configuration like on which server to execute the job and decision of execution result using end code.

2. ERP Job

- Write ERP command (ABAP) directly, execute pre-registered information package or process chain.
- Linkage option with SAP, controls SAP command in the same way as other jobs in job flow.

3. Sub Job Network

- Job networks can be defined hierarchically by being placed in the Job Network flow.
- Specify the job network created in advance, or create a new job network when allocating the object.
- Complex flow can be managed easily.

4. Dialog

- Dialog is an object which waits for a response from the user. Until the user responds, the respective processes remain in the WAIT status.
- End status of dialog can be determined by selecting OK or ERROR option in popup menu when dialog is in WAIT status.
- By placing condition branch under dialog, job flow can be changed.

5. Condition Branch

- Condition branch is used for changing the following:
  - Job Network flow according to the exit code of a unit job or sub-JobNetwork.
  - It is possible to define the range of end code for each branch.
  - Click the number to confirm condition of exit code. Right click to show popup menu to add flow.

6. Calendar Branch

- Calendar branch is an object that executes a flow according to a schedule. If the specified schedule condition is satisfied, the right flow is selected. If not, the downside flow is selected.
- When allocating the part, related schedule can be selected from schedule setting window.
### Job Definition Parts Details 2

#### Parallel Branch
- Parallel Branch is an object that executes multiple jobs or sub job networks in parallel. By default, two flows are prepared in advance.
- Flow can be added through "Add Flow" option, by right clicking the parallel branch menu.
- Flow can be deleted through "Delete Empty Flow" option, which is required to empty flow.
- When both jobs (JOB1 & JOB2) are finished, start JOB4.

#### OR Branch
- OR Branch is an object that executes the subsequent parts if one of multiple branch flows finishes. By default, two flows are prepared in advance.
- Flow can be added through "Add Flow" option, by right clicking the parallel branch menu.
- Flow can be deleted through "Delete Empty Flow" option, which is required to empty flow.
- When either of job is finished, start JOB4.

#### Continuity
- Jumps to the pre-specified job and re-executes the process after that job. In general, the Continuity is used to re-executes processing if a unit job has ended abnormally.
- Designated job can be selected from dialog when placing Continuity part.

#### JNW Waiting
- This object waits for a specified job network to end. It is used to set a complex job order.
- The object can wait for a sub job network that belongs to the same job network or another sub job network in a sub job network or a job network that does not exist in the job network to which the JNW Waiting part belongs, or another user's job network.

#### Event Transmission / Reception
- Event Transmission is a unit to transmit an event from a job network to other job network. By utilizing Event Transmission object, a process in the job flow network can wait for other processes in other job flow.
- Event Reception part is a unit to receive an event from a job network to other job network. By utilizing Event Reception part, a process in the job flow network can wait for other processes in other job flow.

#### Time Waiting
- Time Waiting object waits until an indicated time. Time can be specified on setting dialog in Absolute time (in HH:MM format) or Relative time (in +HH:MM format).
- If the execution of the waited part does not start till the specified time, an alarm message will be generated in the event log.

#### File Waiting
- This object waits for a specified file to exist or to be updated. If the specified file does not pass the condition, it checks the file state at regular intervals.
- Waiting time out can also be set.
- File name can be inherited to the sequenced job.

#### Job Waiting
- This object waits for end of a specified job. It is used to define any complex order. It is also used to insert another job between any job and a conditional branch.
- This object can wait for a job that belongs to the same job network, as well as for a unit job of other job network or sub job network to which the Job Waiting part belongs.
Realize simple and integrated system operation

If you have any questions about MasterScope, please contact below by e-mail

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