How to extend the SAP MMC Snap-In

Applies to:
SAP systems based on SAP NetWeaver  For more information, visit the User Interface Technology homepage.

Summary
The SAP Microsoft Management Console (SAP MMC) provides a common framework for system management. It integrates previously separate tools in a common user interface for centralized system management. Although the SAP MMC itself does not offer any management functionality, it provides an environment for incorporating and accessing management tools. Tools are integrated in the SAP MMC with snap-ins for standardized access to functions.

This paper describes how the existing snap-ins can be extended to serve individual requirements.

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Introduction

Microsoft introduced a general framework for system management applications, the Microsoft Management Console (MMC). The MMC is available as an extension for Windows 9X, NT4.0 and is included in any Windows version since Windows 2000. The MMC itself does not offer any management capabilities, it is just a framework for management applications. So called MMC snap-ins offer the management capability for a specific application. On NT4.0 only a few MMC snap-ins e.g. for MSSQL or IIS exist. As of Windows 2000 Microsoft has adapted almost any management application (e.g. formerly located in the control panel) to MMC snap-ins.

Since Release 4.5B, SAP ships a SAP Management MMC snap-in. It allows an administrator to perform a wide range of administration tasks on a SAP system landscape. The MMC snap-in uses the SAPControl Web service interface of sapstartsrv (or ISAPControl DCOM interface for releases < 6.40) to control individual SAP application servers and can query LDAP directories (like the Microsoft Active Directory) or SLD for an enterprise wide SAP system landscape.

One interesting property of MMC snap-in is the ability to extend already existing snap-ins. This document describes how to extend the SAP MMC snap-in. A major advantage of that technique is that the code of snap-in and extension snap-in is completely separated from each other, but still allows interaction of the snap-ins. Two interesting examples of possible extensions may be:

- Extension of the Database snap-in node. If the SAP MMC snap-in is configured to query a LDAP directory for the SAP system landscape and the database is registered in the LDAP directory, the snap-in displays a Database node for each SAP system. This node includes information about database vendor, database release, SAP System ID, database host, SAP Release. It doesn’t offer any management task for the database. Nevertheless database vendors or SAP database porting groups can easily write a completely separated extension snap-in to over functions like starting/stopping of the database or starting a database vendor specific administration tool. If the database vendor already has a MMC snap-in he may add some functionality to his snap-in to extend the SAP Snap-in.

- Enterprise specific extension. The SAP MMC snap-in already offers a wide range of administrative tasks. Nevertheless sometimes ITs use very specialized tools within the enterprise. By writing extension snap-ins it is very easy to add some more functionality to the SAP MMC snap-in. E.g. the SAP Snap-in currently supports pcANYWHERE, TerminalServer, ssh/putty and telnet for remote access to application servers. By adding an extra menu entry to the application server snap-in node you can easily add support for other remote access tools.

SAP MMC Snap-in Node Types

In order to write an extension snap-in it is necessary to know the existing node types and the corresponding GUIDs. Extension are always done on a per node type basis. These are the SAP Snap-in node types:
The corresponding node type GUIDs are:

- **CR3RootData**: 633547F0-A302-11D1-AE59-080009B07DBB
- **CManagementDomainData**: 2CB3564A-9BA6-4f48-80E2-D56001CBB7B3
- **CR3SystemData**: 633547F4-A302-11D1-AE59-080009B07DBB
- **CDBData**:
  - MSSQL: 72DCA51E-5078-4fe7-925D-51FE8241C0D4
  - DB2: B26851D8-EDD6-4e07-9AF9-DF9DCB647B94
  - DB400: 962D52F3-2880-48f6-9DCC-80C68A38BCEA
  - Other: 369A9B11-4EBF-4a5e-8549-B79EA58A2932
  - ADABAS D: 1EE44C47-9BF5-4980-816D-DA20A1148718
  - INFORMIX: A4CBA8BC-FC1B-4129-82C9-D7B71D4740AB
- **CR3HostData**: 633547F8-A302-11D1-AE59-080009B07DBB
- **CPListData**: 63354800-A302-11D1-AE59-080009B07DBB
- **CSysListData**: C35F1F83-C24B-11D1-AE77-080009B07DBB
- **CAccessPListData**: 5DEEF0D0-2B4F-4d13-89D8-1FCE9A230D20
- **CJ2EEClusMsgListData**: 72A0C5FA-A262-4373-AD8D-53139DD4693F
- **CENQLListData**: E279F378-5132-40da-AAFC-DE21D3C01644
- **CENQStatListData**: 30124160-D25B-4741-89BA-B1CF1D2759BB
- **CAlertListData**: 633547FC-A302-11D1-AE59-080009B07DBB
- **CAlertData**: 63354804-A302-11D1-AE59-080009B07DBB
- **CQueueListData**: EB082803-C2F4-11D1-AE78-080009B07DBB
- **CWLListData**: EB08280F-C2F4-11D1-AE78-080009B07DBB
- **CJ2EEPLListData**: 857F0131-1C42-43ad-B72C-A43C4C939097
- **CJ2EECompListData**: E819398B-6BE4-47b6-8348-A6676F99F664
- **CJ2EECLListData**: 7D5061B1-EACA-42f4-83F2-06F54FF7B1AD
- **CJ2EETLListData**: 8B13015E-4A94-4418-BFCC-C4F2238FE58B
- **CJ2EESLListData**: 407419A0-EB2A-4569-9FFD-7017A6E4CF15
- **CJ2EEEJBSListData**: 7C143EA3-5D36-49d0-83F1-88C36DF43F7F
- **CJ2EERemoteObjListData**: 7B28A88B-E6C3-4de1-88DB-C132FE716EF3
- **CJ2EEAListData**: 37513218-F7FE-4cdc-92B2-0DB17D5FE89E
- **CJSFLListData**: 4902B171-16C0-4feb-9529-245BE41EEB61
- **CVMGCLListData**: AECAEEB6-953A-45ce-B81B-7EB4D45255AA
- **CVMHeapListData**: 17C9F35D-FFFF-4148-A572-AEDBC60FA40C
- **CIcmanData**: B891EF32-397D-45dc-804F-C15927704D8F
- **CICMTListData**: 940182A2-E6A0-45dc-844D-68F2DA3BA55A
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- CICMConListData: 7431F328-D1BE-4fd7-9916-E8B23E016598
- CICMCacheListData: F229AAF3-1597-41c0-A0A8-083D75EA9C74
- CICMProxyConListData: 1816C5E4-48DB-413c-94DB-1CD9D2ECA0B4
- CITSData: 1245EB83-26CB-4BB7-A944-066D71C5763B

Clipboard Formats

Snap-ins can exchange Data by using Clipboard formats. All snap-ins have to support the Microsoft standard formats CCF_NODETYPE, CCF_DISPLAY_NAME, CCF_SZNODETYPE, CCF_SNAPIN_CLASSID. In addition the SAP Snap-in supports a CCF_MMC_SAPDATA format. This can be used by extension snap-ins to retrieve SAP specific data from the SAP Snap-in. The data is returned in a wide character buffer, which holds a “\0” terminated list of strings. Each string is organized in the form “<Parameter>=<Value>”. E.g. for the database node the buffer is filled like:

"Database=ORACLE 8.0.1\0DBHost=us0036.wdf.sap-ag.de\0SID=BIN\0"

Currently the CManagementDomainData, CR3SystemData, CDBData, CR3HostData and CITSData support the CCF_MMC_SAPDATA format and will return the following values:

- CManagementDomainData: "CN=cn=Public,cn=Walldorf\0"
- CR3SystemData: "SID=BIN\0"
- CDBData: "Database=ORACLE 8.0.1\0DBHost=us0036.wdf.sap-ag.de\0SID=BIN\0"
- CR3HostData: "Host=p18357.wdf.sap-ag.de\0SID=BIN\0Nr=53\0OS= Windows NT 4.0 1381 Service Pack 4 4x Intel 80686 (Mod 1 Step 6) \0KernelRelease=50A patch 0\0"
- CR3ITSData: "Host=pcintel19.nt5.sap-ag.de\0Instance=IDS\0WebServer=iis\0OS= Windows NT 5.0 219S Service Pack 1 4x Intel 80686 (Mod 7 Step 2) \0ITSRelease=46D patch 3008\0"

If necessary SAP will add additional parameters, so extension snap-ins should not rely on the order of the parameters.
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- [https://www.sdn.sap.com/irj/scn/go/portal/prtroot/docs/library/uuid/60e24f7b-1ba1-2b10-c0a0-e514b855624b](https://www.sdn.sap.com/irj/scn/go/portal/prtroot/docs/library/uuid/60e24f7b-1ba1-2b10-c0a0-e514b855624b), How to use the SAPControl Web Service Interface
- For more information, visit the [User Interface Technology homepage](http://msdn.microsoft.com/en-us/library/aa814679(VS.85).aspx).
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