[MS-PAC]: Privilege Attribute Certificate Data Structure

Revision Summary

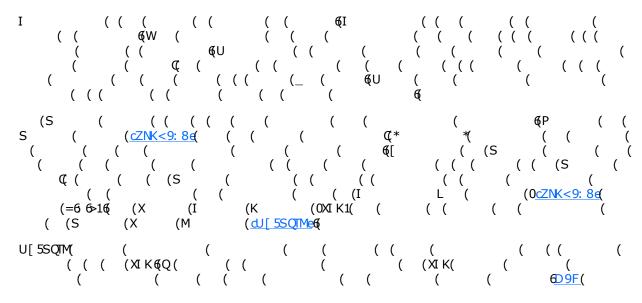
Date	Revision History	Revision Class	Comments		
987: : 7: 88>(8689(((UKXX(U	(9(Q (I	(
8979A7: 88 (968(((UKXX(U	(9(
8; 78: 7: 88 (969(((U ((
8<78; 7: 88 (96 (((U ((

Date	Revision History	Revision Class	Comments
8=7997: 88 (96 (((U ((
8>78 97: 88 (96,69(М (Z ((((((
8 78; 7: 88 (96<(U (U ((6
8 7: 87: 88 (96<€9(М (Z ((((((
8@7987: 88 (96=(U (] (((6
8A7: @7: 88 (96-(U (U ((((((
987: ; 7: 88 (96>69(М (Z ((((((
997; 87: 88 (96>6 (М (Z ((((((
897: =7: 88@(: 68(U (] (((((6
8; 79<7: 88@(: 69() (] ((((
8=79>7: 88@(; 68(U (] ((((((
8>7: 87: 88@(<68(U (] (((((6
8 7: =7: 88@(<6869(М (z ((((((
8@7: A7: 88@(<686 (М (z ((((((
987: <7: 88@(<69(U (] (((6
9: 78=7: 88@(<6 (U (] (((6
8979>7: 88A(<6 (U (] (((6

Table of Contents

1	Introduction4
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	96 ((((V (Z (((((((((((((((((((((((((((((((
	96 6 (((Q (Z (60000000000000000000000000000000000
	96 ((([(W (Q 1((((((((((((((((((((((((((((((((((
	96(((Z ((X ((W ([(60000000000000000000000000000000000
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	96((((T (T (((((((((((((((((((((((((((
	96 (((5M) (N (((((((((((((((((((((((((((((((((
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	: 6 6 (((OZW] XgUMUJMZ[PQX(6555555555555555555555555555555555555
	: 6 (((XI K a XM(555555555555555555555555555555555555
	: 6<[((XI Kg Q/NMg J] NNMZ(66666666666666666666666666666666666
	: 6=(((SMZ)g I TQLI QW/gQ/NW(666666666666666666666666666666666666
	: 6>(((XI K(K (6555555555555555555555555555555555
	: 6>69(((XI KgKZMLMV Q TgQ/NM (000000000000000000000000000000000000
	: 6>6 (((XI KgKZMLMV Q TgLI I (6666666666666666666666666666666666
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	: 6>6<(((V TUg[] XXTMUMV I TgKZMLMV Q T66666666666666666666666666666666666
	: 6 (((XI KgKTQ/IV g Q/NW/00000000000000000000000000000000000
	: 6Q((XI Kg[QD VI] ZMg L I (6666666666666666666666666666666666
	: 69 9 (([([(0000000000000000000000000000000
	: 6@6 (((SLK([(66666666666666666666666666666666666
	: 6A(((K (L (Q (66666666666666666666666666666666
	: 698((()] XVg L V[g Q/NV(666666666666666666666666666666666666
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3	Structure Examples
3	
	; 6 ((([(((((((((((((((((((((((((((((((
4	Security Considerations30
	<69(() (XI K(L (6666666666666666666666666666666666
	<6 (((I (N (60000000000000000000000000000000000
	<6 60(((Z (([Q.(Q ` (`((XI K)666666666666666666666666666666666666
	<pre><6 6 ((([Q (N</pre>
	<6 \$ (((N (60000000000000000000000000000000
	<pre><6(((Q (([</pre>
5	Appendix A: Windows Behavior37
6	Change Tracking39
7	Index 41

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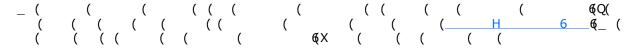


1.1 Glossary

Interface Definition Language (IDL)(Microsoft Interface Definition Language (MIDL)(Network Data Representation (NDR)(relative identifier (RID)(remote procedure call (RPC)(**RPC transfer syntax**(security identifier (SID)(Service for User (S4U)(**Service for User to Proxy (S4U2proxy)**(Service for User to Self (S4U2self)(ticket-granting service (TGS)(ticket-granting ticket (TGT)(trusted domain object (TDO)(Universal Naming Convention (UNC)(UNC path((((((((

1.2 References

1.2.1 Normative References



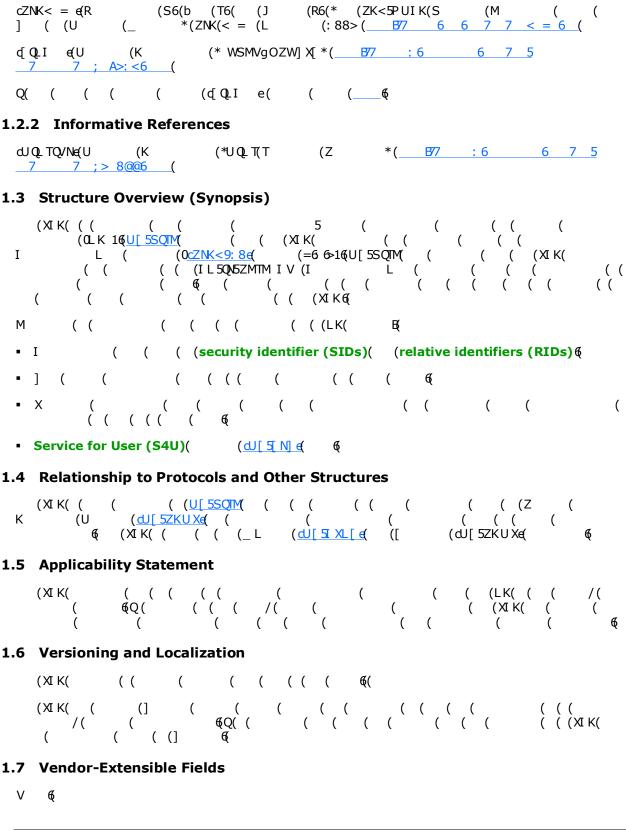
4 / 42

[MS-PAC] — v20090114 Privilege Attribute Certificate Data Structure

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Release: Wednesday, January 14, 2009

```
(X (K 7 8>6 (
dK 8>e( (W
            (0
               (*LKM(969B(Z
                                      (K *(K 8>(I
                                                     (9AA (
  B77
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               (K
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                                                          (:88 6
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               (K
                             (L) (I) (V5b*(R)
                                                          (:88 6
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              (K
                                         ([
                                                     *(R
                                                          (:88 6
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                                                  ([
                                                              __*(R (
              (K
                                               ([
:88 6
                               (L ( *(R
dU[5L aXe(U
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                                               (:88 6
                            (X (U (O *(U
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dU[5SQTMe(U
                            (X
                                     (M *(R
              (K
                       (*<u>S</u>
                                                    (:88 6
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              (K
                        (*<u>V (TI V(U (OV TU1(I</u>
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                                                                      *(
R (: 88 6
                        (<u>*V</u> (Z (X ([
dJ[5VZXK€(U
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              (K
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                        (*Z (K (U (X ([
du[ 5ZKU Xe(U
               (K
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: 88 6
dJ[5ZXKMe(U
                        (*<u>Z</u> (X (K (X (M *(R
              (K
                                                               (:88 6
dJ[5[IUZ€(U
               (K
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                                            (<u>(</u> <u>I</u> <u>U</u> <u>1</u>(<u>Z</u> (X
            1*(R (: 88 6
OK 5 5
dU[5 N] €U
             (K
                              (X
                       *(R
                              (:88 6
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           (R6(* (S
                              (=(O[[51 XQU
                                               *(ZNK(9A)<(R (9AA))
           6 7 7 9A><6 (
  B77 6
                     ( ( (ZNK ( (Q
6 6 7 7 : 99A6 (
cZNK: 99A&( J ( [ 6(*S ( B77
cZNK: 99Ae(J
                                            (Z
                                                           *(JKX(9<(ZNK(
                                                      (T
                                         (_ (: 888(S
(: 88: (
cZNK;: <<e([ (U 6(
                    (R6(
                          (J
                                (R6(*U
                                                           (K
                                                                 (
      ( ([ (X )
                           *(ZNK(;: << (N
                    (X
                7 ;: <<6 (
cZNK; A>9e Z
                           (K (
7; A>96 (
              (S6(*M
                                    ([
                                              ( (S
                                                       (=*(ZNK(; A>9(
     (: 88=(
              B77 6 6
              (K6(a ( 6(P
cZNK<9: 8e(V
cZNK <==>e(b (T6( (J6(*X)
                                          ( (Q
                                                 (I
                                                            ( (S
                                                                     *(
ZNK(<==>(R (: 88>( B7 6 6 7 7 )
```



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2 Structures

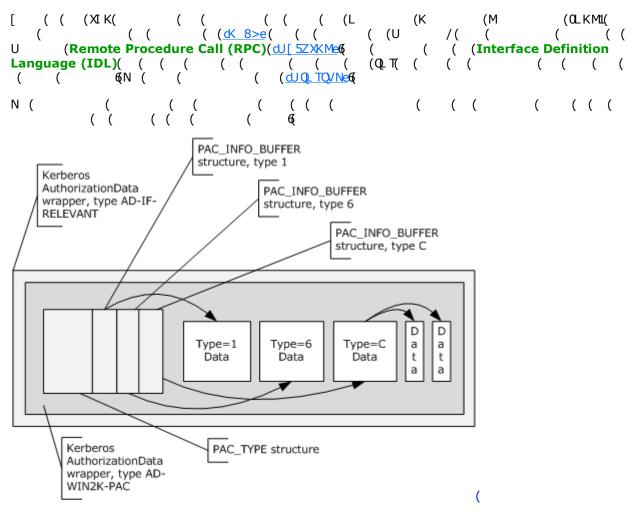


Figure 1: Encapsulation layers

```
(=6 6>1( ( (
                    (IL5QN5ZMTMIV (0<u>cZNK<9:8e</u>(
                                            (I L 5_ QV: S5Xİ K(0<u>cZNK<9</u>: 8e
                     (I L (
     €Q(
                                       ( (
    ( 6=6<16Q
                      ( ( <u>PACTYPE</u>(
                                            ( ((
                           ( (PACTYPE(
   (XIK(
             €Q
                                           ( ( (
                                                 ( (
                         (PAC_INFO_BUFFER(
PAC_INFO_BUFFER(
                                                   ( (
     ( ( XI K(
                  ( (PAC_INFO_BUFFER(
                                           ( ( ( (9(
                (>(
                       ( (
                              (<u>: 60</u>6
Note ( ( ( (
                              C ( (XIK( ( ( ( (
                                                               б
```

2.1	Common	Types
-----	--------	-------

(XI K(((((BBYTE (USHORT (U	JLONG (ULONG6	4 (FIL	ETI	ME	((
RPC UNICOD	E	STRING (((((<u>dU[5L a Xe</u>	6 (XI	K((((((SID(
((((dJ[5L	a Xe	В							

2.2 Constructed Security Types

2.2.1 KERB_SID_AND_ATTRIBUTES

```
( ( ( (
(KERB_SID_AND_ATTRIBUTES(
                                             ( ([ QL(
                                   (
                      ( (SMZJg I TQLI QWVgQVNW(0
                                                     <u>(: 6=1(</u>
         6Q( ( (
                                   ( ( ([Q_(
                                                      Q
                          ( (
      ( ( (KERB_SID_AND_ATTRIBUTES(
                                              ( (
                                                       ( (
typedef struct {
 PSID SID;
 ULONG Attributes;
} KERB_SID_AND_ATTRIBUTES,
```

SID: I((([Q.(6

*PKERB SID AND ATTRIBUTES;

Attributes(((((((

(8((9((((△	$\bot \frown$	()<	((@(() A(9(9(((△	$\bot \frown$	X _	((M)	() A(: (9((;())	$\bot \frown$	()<	((a)	(A(; (8((9(
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_ ((((E

Value	Description
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J((((((((((((((((((((
К((((((((((((((((((((
L((((((((((((((((((((
М	(((((((((((((((((((

2.2.2 GROUP_MEMBERSHIP

	(GROUP_MEMBERSHIP(
	(((GROUP_MEMBERSHIP((((E
	<pre>typedef struct _GROUP_MEMBERSHIP { ULONG RelativeId; ULONG Attributes; } GROUP_MEMBERSHIP, *PGROUP_MEMBERSHIP;</pre>
	RelativeId: I(;:5 (((((ZQ.(((((((
	Attributes: I (;: 5 (
2.	3 РАСТУРЕ
	(PACTYPE(
	(PACTYPE((((E
	(
	J (
	(
	J (0 1(
	6666
	cBuffers (4 bytes): I (;: 5 (
	Version (4 bytes): I (;: 5 (
	Buffers (variable): I ((PAC_INFO_BUFFER(6
	(((((((((((((((((((

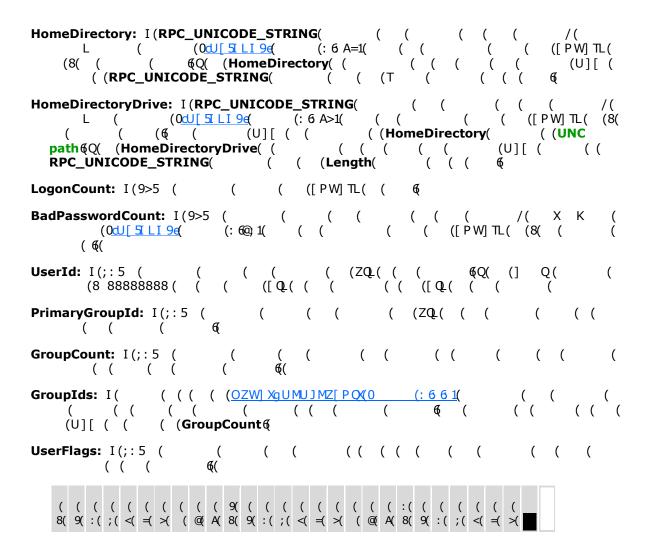
2.4 PAC_INFO_BUFFER

N	((PACTYPE (section 2.3)((((PAC_INFO_BUFFER((
	((((((((((((((((((((((
	(6
Р	`((`(S (L ` `(K ` (0SLK1(((`
((` (Ù][(VW (`
`	((3)[((((((((((((((((((
((); ((
8(À(8(9(
	,	
	J [(
	J [(
	W (
	666	

Value	Meaning
8 88888889(T ((0 (<u>: 6</u> =16/XIK((U][(((((
8 8888888: (K ((0 (<u>:6</u> -16/XIK(([PW]TL(VW(((((((((((((((((((
8 8888888>([((0 (<u>: ©</u> 16/XIK((U][(((((
8 8888888 (SLK(0 (1((0 (<u>: 60</u> 16/XIK((U][(((((((((((((((((((
8 88888881 (K (((((((((((((((((((
8 88888831(K (((0 (: 6A16 XI K((U][(((((((((((((((((((
8 888888K(] (((0] XV1((L (V ([(0LV[1((0 (: 69816[XI K(([PW] TL(VW(((((((((([(((((((((

```
Offset (8 bytes): I (><5 (
                                   (
                        (U)[((
2.5 KERB_VALIDATION_INFO
    (KERB_VALIDATION_INFO(
                                     (
                                                   /(
        ( ( (LK&I( ( (KERB_VALIDATION_INFO(
                           ( (Buffers(
                                                             (PACTYPE(
                                             ( ( (
                       ( ( Offset(
                                                          (PAC_INFO_BUFFER(
 <u>: 6</u>1( (
                                      ( (
                                                                (PAC_INFO_BUFFER(
        (<u>: 6<</u>1( ( ( Buffers(
                                             ( (
                                  (ulType(
         ( ( (8 88888896
    (KERB_VALIDATION_INFO(
                                      ( ( (
  NETLOGON_VALIDATION_SAM_INFO4
                                              (0dU[ 5VZXKe(
                                                               (: 6 696<69; 16Q( ( (
                                                                                      (
                          ( (
                                                (I
                                                      (L
                                                                        ( (
                                                              ( (
                         (NETLOGON_VALIDATION_SAM_INFO4(
                                                                                  ( (
                                                ( (<u>dl[51 XL[e</u>
                                                                   (; 696K
                                     ( (
  KERB VALIDATION INFO
                                         (V TU5
  KERB VALIDATION INFO(
                             (
                                 (NETLOGON_VALIDATION_SAM_INFO4(
                ( ( (V TU(
                                                                (U[ 5SQIM
                                                      ( (
                                                 (
    (KERB_VALIDATION_INFO(
                                                 ( (ZXK(<u>dU[5ZXKMe</u>6)
                                      ( (
    (KERB_VALIDATION_INFO(
                                      ( (
                                              ( (
                                                        B(
   typedef struct {
     FILETIME LogonTime;
     FILETIME LogoffTime;
     FILETIME KickOffTime;
     FILETIME PasswordLastSet;
     FILETIME PasswordCanChange;
     FILETIME PasswordMustChange;
     RPC_UNICODE_STRING EffectiveName;
     RPC_UNICODE_STRING FullName;
     RPC_UNICODE_STRING LogonScript;
     RPC UNICODE STRING ProfilePath;
     RPC UNICODE STRING HomeDirectory;
     RPC UNICODE STRING HomeDirectoryDrive;
     USHORT LogonCount;
     USHORT BadPasswordCount;
     ULONG UserId;
     ULONG PrimaryGroupId;
     ULONG GroupCount;
     [size_is(GroupCount)] PGROUP_MEMBERSHIP GroupIds;
     ULONG UserFlags;
     UCHAR UserSessionKey[16];
     RPC UNICODE STRING LogonServer;
     RPC UNICODE STRING LogonDomainName;
     PSID LogonDomainId;
     ULONG Reserved1[2];
     ULONG UserAccountControl;
     ULONG Reserved3[7];
     ULONG SidCount;
     [size is(SidCount)] PKERB SID AND ATTRIBUTES ExtraSids;
     PSID ResourceGroupDomainSid;
```

LogonTime: I (FILETIME) ((((((/(T (((((((((((
PasswordLastSet: I (FILETIME(
PasswordCanChange: I (FILETIME(
$ \begin{array}{llllllllllllllllllllllllllllllllllll$
EffectiveName: I (RPC UNICODE STRING) I V ((OdU[5]LI; e) (: 6: 91) (((((((((((((((((((
ProfilePath: I (RPC_UNICODE_STRING(



	Value	Description
	(Q (((((((((((((((((((
	((((((U[5SQTM(
	Value	Description
	X(Q ((((((
	(Q (((ExtraSids(((((((((((((((((((
	Z(Q (((ResourceGroupIds(((6(
	S(Q (((XSQVQ(0 ((cZNK<==>e1((((
	I (((U][(((((((((((((((((((
Use	erSessior (((U][nKey: I((((((((((((((((((((((((((((((((((((
Log	jonServe S (r: I (RPC_UNICODE_STRING(
Log		inName: I (RPC_UNICODE_STRING(
Log	gonDoma LogonDo PrimaryG	inId: I ([Q (
Re	served1:	I(5 (((;:5 (6 (((((((((((((((((
Use	er Accoun (tControl: I (;: 5 (
Re	served3: (I(5 (((;:5 (
Sid	Count: I ExtraSids UserFlags	(;:5 (
Ext	((((UserI	I(((((SMZ)g[Q.gIVLgI ZQI] M[(0 (:6691(((((((((((((((((((
Re	sourceGr (oupDomainSid: I ([Q (

	$ \begin{array}{llllllllllllllllllllllllllllllllllll$
2.6	PAC Credentials
_	((S) ((((((((((((((((((((((((((((((((((
J	(((((XI K(
	(XIK(
	((((XIK((((
	PAC_CREDENTIAL_DATA Structure SECPKG_SUPPLEMENTAL_CRED structure
	MSV1_0_SUPPLEMENTAL_CREDENTIAL structure
	PAC_CREDENTIAL_INFO structure SECPKG_SUPPLEMENTAL_CRED structure
Fig	gure 2: PAC credentials
P/	((XI KgKZMLMV Q TgQ/NW(((((((((((((((((((

<u>VTU X</u> €(((((((((((((((((((((
2.6.1 PAC_CREDE	ENTIAL_INFO
(((6	TgQVNW(((((((((((((((((((
I (XI KgKZMLMV Q T ((ZNK- (((([(ZNK-=>-e((6)	gQVNW(
(((((((((((((((((((((((
((((((8(9(:(;(<(=(:	(((((((((((((((((((
	(
	М (
	[L (0 1(
	666
Version (4 byte U][((8 88	
EncryptionType	(4 bytes): I(;:5 (
Value	Meaning
8 88888889(L (((0LM[1((((0KJK1(((
8 8888888;(LM[((KJK(((UL=6(
8 88888899(I M 9: @gK [gPUI Kg[PI 9g A>(09: @5 ((((((((((((((((((
8 8888889: (I M[:=>gK [gPUI Kg[PI 9gA>(0 =>5 (((((((((((((((((((

	8 8888889 (ZK<((((((0P UI K1(6(
Sei	rializedData ((variabl (l e): I((((PAC_C	RED (DENTIAL_D	ATA((Encrypti	((onType(6 (
2.6.2	PAC_CREDE	NTIAL	_DATA								
(P/ (ZXK(<u>d</u>	AC_CREDENT (((J[_5ZXKMe6(IAL_DA (S	ATA (((((PAC	((C_CREDE	((NT)	(IAL_DATA(5 ((((
	def struct _PA	_	ENTIAL_DA	TA {							

[size is(CredentialCount)] SECPKG SUPPLEMENTAL CRED Credentials[*];

2.6.3 SECPKG_SUPPLEMENTAL_CRED

Value

} PAC_CREDENTIAL_DATA,
 *PPAC_CREDENTIAL_DATA;

Meaning

```
typedef struct _SECPKG_SUPPLEMENTAL_CRED {
   RPC_UNICODE_STRING PackageName;
   ULONG CredentialSize;
   [size_is(CredentialSize)] PUCHAR Credentials;
} SECPKG_SUPPLEMENTAL_CRED,
   *PSECPKG_SUPPLEMENTAL_CRED;
```

Credentials: I		J][((PackageNan	((ne€	((((((
2.6.4 NTLM_SUF	PPLEMENTA	L_CREDENT	TAL			
(NTLM_SUPPL ∨ TU((W_ N1€O (€L (((NTLM_SUPPLEME	((((((((<u>d)[5XSKI </u> (((((((N±(((V (((XIK(L ±U[5VTUXe6((XI K((
typedef struct _ ULONG Version; ULONG Flags; BYTE LmPasswor BYTE NtPasswor } NTLM_SUPPLEMEN *PNTLM_SUPPLEME	d[16]; d[16]; TAL_CREDENTIA	_ L,	AL {			
Version: I(;:5		(((((6 ((U)[(
Flags: I (;: 5	(((6	((((((《Flags (U][(
((((8(9(: (; ((((((((((((((((((((((9((((A(8(9(: (;(((((((: ((((A(8(9(: ((((((×	((; (((@(A(8(9(
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_ (((((E {				
Value	Description					
π	Q (((LM OWF(((((6		
V(Q (((NT OWF(((((6		
I (((U][((((((U][((((6	
LmPassword: LmPasswor						OWF (
NtPassword: 1 NtPassword	[(9>5 (((U][((((@5 (((V(((((((NT (Flags(OWF6 (6(
2.7 PAC_CLIENT	_INFO					
(PAC_CLIENT_ ((% (PAC_C	_INFO((&Q LIENT_INFO((((x	(((XI K I K(((Bu	((((((lffers((((/(

18 / 42

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PACTYPE((
((((((((((((((((((((9(
K Q(
6666	
V T (V (0 1(
666(
ClientId (8 bytes): I (<u>FILETIME</u> (((
NameLength (2 bytes): I ((
Name (variable): I (((9>5 (] (((5 ((((((((((((((((
2.8 PAC_SIGNATURE_DATA	
(PAC_SIGNATURE_DATA((SLK(((((
(((XI K(•
((((PAC_SIGNATURE_DATA(((((版(
((((((((((((((((((((9(

	((((((((((((((((((((: 6<1(6 ((((ulType((((((8888888>(
	Value	Meaning	
	SMZJgKPMKS[]UgPUIKgUL=(8 NNNNNN ×(I ((<u>cZNK<9: 8e</u> ((9>(&L ((<u>cZNK< = e(</u> (<6[((59; @6(
	PUI Kg[PI 9g A>gI M[9: @(8 8888888N(I (((<u>CZNK; A>: e(</u> L (((9=6((6[(9:(6
	PUI Kg[PI 9g A>gI M[: =>(8 88888898(I (((<u>CZNK; A>: e</u> (L (((9>6((6[((9:(6
:	Signature (variable): I(((SMZJgKPMKS[]UgPUIKgUL= ((((((((((((((((((((((((((((((
2.8.1	l Server Signature		
	(((SLK) (ulType(((8 88) ((((((5 60) (5 60) ())))))))))))))) ((EER(
	(TA(((6	K(
2.8.2	2 KDC Signature		
09	(((SLK& (ulType(88888 6 (ER(
	(SLK(((((Signature)	ZNK< = e((([([ture(((SLK/(PAC	((((XIK(6 C_SIGNATURE_DATA(6
2.9	Constrained Delegation Inf	formation	
S X	(S4U_DELEGATION_INFO(((((((((((<u>D99F</u> 6 <u>XKMe</u> 6((((((((((((((((((((
t	typedef struct _S4U_DELEGATION_IN	IFO {	

20 / 42

ULONG TransitedListSize; [size is(TransitedListSize)] PRPC UNICODE STRING S4UTransitedServices; } S4U DELEGATION INFO, *PS4U DELEGATION INFO; **S4U2proxyTarget:** I (<u>RPC UNICODE STRING</u>(((U)[(((((TransitedListSize: U][((((((S4UTransitedServices(((2.10 UPN_DNS_INFO (] XVgL V[gQ/NW(((((((() () XVgL V[gQ/NW((((] XV((L V[((Buffers((XIK aXM) (0 (<u>: 6</u>1(((Offset((((XI KgQ/NWgJ] NNMZ((: 6<1(((XI KgQVNWgJ]NNMZ(((8 888888)K)6 (ulType(<u>D9: F</u>6 (((:(((@(A(8(9((<((9(((((A(8(9(: (; (< (; ((A(8(9((@] Т W L L V Τ L L ((N ((9>5 (6 ((5 (9>5 (UpnOffset (2 bytes): I (((**DnsDomainNameLength (2 bytes):** I ((9>5 (5 (((((DnsDomainName(((5 **DnsDomainNameOffset (2 bytes):** I ((((

RPC UNICODE STRING S4U2proxyTarget;

```
(
                              (
                                 9(
                                                  (
                                                     (
                                                               (
                                                         (
                                                            @ A 8 9 : ( ; ( < =
   9( : ( ; ( <(
                =( >(
                       ( | @( | A( | 8( | 9( | : ( | ; ( | <( |
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2.11 Formal MIDL Definition

```
import "ms-dtyp.idl";
typedef struct PAC_INFO BUFFER {
   ULONG ulType;
   ULONG cbBufferSize;
   ULONG64 Offset;
} PAC INFO BUFFER, *PPAC INFO BUFFER;
typedef struct _PACTYPE {
   ULONG cBuffers;
   ULONG Version;
   PAC INFO BUFFER Buffers[1];
} PACTYPE, *PPACTYPE;
typedef struct _PAC_CREDENTIAL_INFO {
   ULONG Version;
   ULONG EncryptionType;
   UCHAR SerializedData[1];
} PAC_CREDENTIAL_INFO, *PPAC_CREDENTIAL_INFO;
typedef struct SECPKG SUPPLEMENTAL CRED {
   RPC UNICODE STRING PackageName;
   ULONG CredentialSize;
   [size_is(CredentialSize)]
   PUCHAR Credentials;
} SECPKG_SUPPLEMENTAL_CRED, *PSECPKG_SUPPLEMENTAL_CRED;
typedef struct _PAC_CREDENTIAL_DATA {
   ULONG CredentialCount;
    [size_is(CredentialCount)]
         SECPKG_SUPPLEMENTAL_CRED Credentials[*];
} PAC CREDENTIAL DATA,
```

```
*PPAC CREDENTIAL DATA;
typedef struct PAC_CLIENT_INFO {
   FILETIME ClientId;
   USHORT NameLength;
   WCHAR Name[1];
} PAC CLIENT INFO, *PPAC CLIENT INFO;
typedef struct NTLM SUPPLEMENTAL CREDENTIAL {
   ULONG Version;
   ULONG Flags;
   UCHAR LmPassword[16];
   UCHAR NtPassword[16];
} NTLM SUPPLEMENTAL CREDENTIAL, *PNTLM SUPPLEMENTAL CREDENTIAL;
typedef struct SID *PISID;
typedef struct CYPHER BLOCK {
   CHAR data[8];
}CYPHER_BLOCK;
typedef struct _USER_SESSION_KEY {
   CYPHER_BLOCK data[2];
}USER SESSION KEY;
typedef struct KERB SID AND ATTRIBUTES{
   PISID Sid;
   ULONG Attributes;
} KERB_SID_AND_ATTRIBUTES, *PKERB_SID_AND_ATTRIBUTES;
typedef struct GROUP MEMBERSHIP {
   ULONG RelativeId;
   ULONG Attributes;
} GROUP MEMBERSHIP, *PGROUP MEMBERSHIP;
typedef struct _KERB_VALIDATION_INFO {
   FILETIME LogonTime;
   FILETIME LogoffTime;
   FILETIME KickOffTime;
   FILETIME PasswordLastSet;
   FILETIME PasswordCanChange;
   FILETIME PasswordMustChange;
   RPC UNICODE STRING EffectiveName;
   RPC UNICODE STRING FullName;
   RPC UNICODE STRING LogonScript;
   RPC_UNICODE_STRING ProfilePath;
   RPC UNICODE STRING HomeDirectory;
   RPC UNICODE STRING HomeDirectoryDrive;
   USHORT LogonCount;
   USHORT BadPasswordCount;
   ULONG UserId;
   ULONG PrimaryGroupId;
   ULONG GroupCount;
   [size_is(GroupCount)]
   PGROUP MEMBERSHIP GroupIds;
   ULONG UserFlags;
   USER SESSION KEY UserSessionKey;
   RPC UNICODE STRING LogonServer;
   RPC UNICODE STRING LogonDomainName;
```

23 / 42

[MS-PAC] — v20090114 Privilege Attribute Certificate Data Structure

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Release: Wednesday, January 14, 2009

```
PISID LogonDomainId;
   ULONG Reserved1[2];
   ULONG UserAccountControl;
   ULONG Reserved3[7];
   ULONG SidCount;
   [size_is(SidCount)]
   PKERB_SID_AND_ATTRIBUTES ExtraSids;
   PISID ResourceGroupDomainSid;
   ULONG ResourceGroupCount;
   [size is(ResourceGroupCount)]
   PGROUP MEMBERSHIP ResourceGroupIds;
} KERB_VALIDATION_INFO, *PKERB_VALIDATION_INFO;
typedef struct _S4U_DELEGATION_INFO {
   RPC UNICODE STRING S4U2proxyTarget;
   ULONG TransitedListSize;
    [size_is( TransitedListSize )]
   PRPC_UNICODE_STRING S4UTransitedServices;
} S4U_DELEGATION_INFO, * PS4U_DELEGATION_INFO;
typedef struct UPN DNS INFO {
   USHORT UpnLength;
   USHORT UpnOffset;
   USHORT DnsDomainNameLength;
   USHORT DnsDomainNameOffset;
   ULONG Flags;
} UPN DNS INFO, *PUPN DNS INFO;
```

3 Structure Examples

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000000c0	02 00	00	00	00	00	14	00	02	00	00	00	00	00	18	00							
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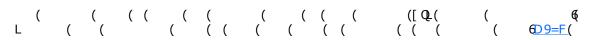
26 / 42

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4 Security Considerations

4.1 Tampered PAC Data ((((((U)[((((((XI K(((XIK(((((((XSQ)Q(4.2 Authorization Validation and Filtering 4.2.1 Rules for SID Inclusion in the PAC ((<u>cZNK<9: 8e</u>6 ((cZNK); << e6(((((([QL B(((5 ((([Q(0d)[5]L[4] ($\Theta\Theta$ 6 Θ 6 Θ 1(U)][(((XI K(((SLK(((I L[g] Ng_WZS[I QWgI KKW] V ((4.2.2 SID Filtering



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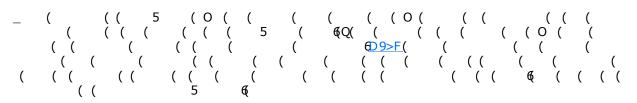
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SID pattern	Description of the pattern	Action
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[595=59A((T ([(I N (
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[595=5: 95 5 ((X (([O (I N (
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[595=5: 95DL F 5Z(ZD=88(_ 5 ([Q.((N [(
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[595=5: 95DL F 5 =8 9((0 (L [(
[595=5: 95DL F 5 =8: (S (L [(
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SID pattern	Description of the pattern	Action
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[595=5: 95DL F 5 =9 ((K (X (L [(
[595=5: 95DL F 5 =9@([(I (N [(
[595=5: 95DL F 5 =9A((M (I (N [(
[595=5: 95DL F 5 =: 8((O (X (K (W (L [(
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4.2.3 crealm Filtering



4.3 Index of Security Parameters

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5 Appendix A: Windows Behavior

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6 Change Tracking

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7 Index

